Standard Sports Areas

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Herman W. Schnell

Standard Sports Areas

for

Industrial Recreation

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Foreword

THIS MANUAL PRESENTS, in condensed, ready-reference form, standard dimensions and specifications for the sports areas commonly found in industrial recreation programs. Compiled for the benefit of the industrial recreation director, it is limited to official standards for layouts and facilities as established by the governing bodies of the activities included. Details of construction are not within its province. Some reference is made, however, to other publications containing such information.

A word about the sources used in compiling these data, which will explain the use of the word *standard*: For every sport over which the Amateur Athletic Union has governing authority, that source has been used, since it is under A.A.U. rules that industrial teams must compete in recognized events in those sports. In the case of sports outside this category, the rules of the individual official governing bodies, where such exist, or of the National Collegiate Athletic Association have been followed. In the case of sports having no governing bodies, or whose organizations the I.R.A. has been unable to contact due to changes of address, recourse has been made to unofficial, but presumably reliable, sources. In each instance, the source used is stated. Additional information and suggestions, mainly the result of interviews with sports authorities, are appended parenthetically. A complete list of published sources appears in the Bibliography.

For the sake of uniformity, and to provide a ready basis for comparison, dimensions are given in feet and inches, wherever practicable, and translated parenthetically into yards, where yards are the customary unit of measurement. Where this was not practicable, the procedure is reversed. Metric-system measurements appear only under track-and-field and swimming-and-diving, with parenthetic translations into the English system.

For the sake of clarity of detail, the diagrams, in general, are purposely not drawn to scale.

In most instances where no playing-surface specifications are given in the official rules, none are given here. It is assumed that the recreation director will take into account such matters as proper ground surface and drainage, will avoid windy locations for certain sports, and will arrange for a north-south playing axis wherever possible.

Here, then, are the standard dimensions and specifications of sports areas, as selected and compiled for the particular use of the industrial recreation director. It is not expected that they will be followed to the letter. Space limitations in industrial setups often force the use of smaller-than-standard areas. Special adaptations of official areas to fit individual plant requirements often may be preferable to national and international standards. The industrial recreation director must be able to adapt his program and facilities to the material at hand. But if he is to make adaptations, he first must know the standards. And if his program develops championship teams or individual players who want to train for recognized amateur meets, that training must be done on, or in, the standard areas used in official competition. Finally, the construction of standard areas in industrial setups will make possible the use of plant facilities for official events.

Space limitations preclude listing the names of all who have aided in the compilation of this material. Special thanks, however, are due the Amateur Athletic Union and the Chicago Park District for the many hours of consultation time they so generously donated. To all the others, the I.R.A. hereby expresses its sincere appreciation.

Standard Sports Areas

Baseball

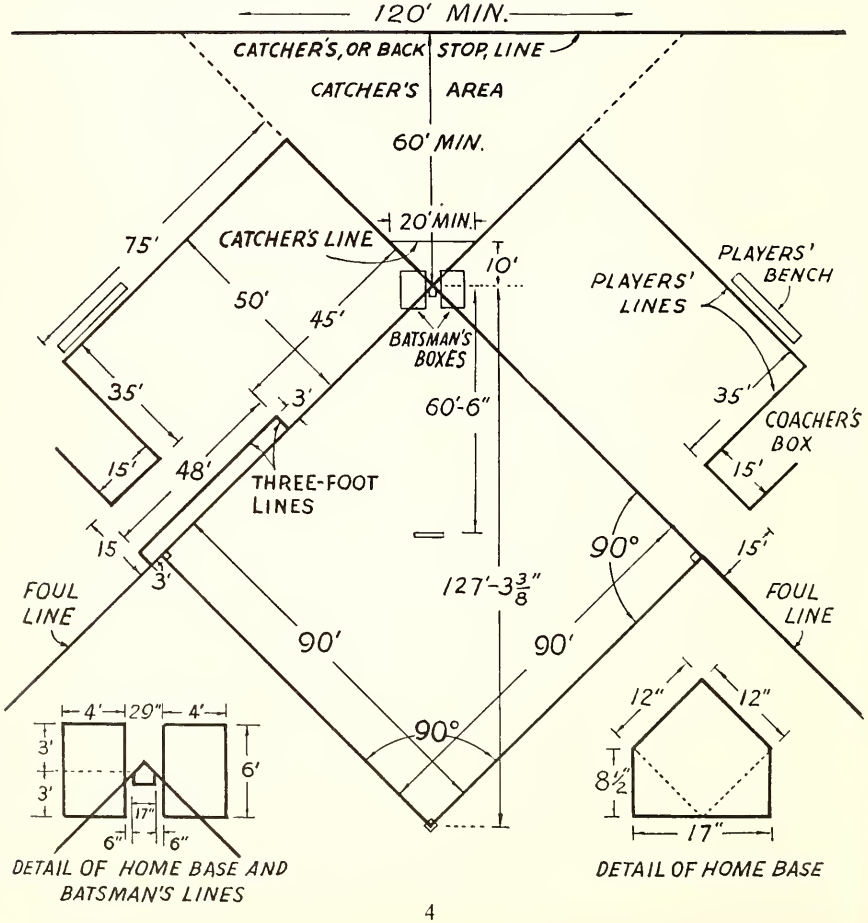
Dimensions and Specifications of the Joint Playing Rules Committee of the National League and the American League

Over-all Diamond Dimensions. 90′ x 90′. Distance across diamond, through center, from home base to second, or from first base to third, measured from points where base lines meet—127′ 3⅜″.

Additional Space Required. To obviate the necessity for ground rules, there should be at least 60′ between home base and grandstand, and no fence or stand in fair territory should be less than 250′ from home base.

Surface. Sod should be removed from base lines and may be removed from around pitcher's plate.

Pitching Distance. 60′ 6″, measured from front of pitcher's plate to point of home base where base lines meet.



Pitcher's Plate. A plate of whitened rubber, measuring 6″ x 24″ over the top surface, set into and flush with the ground. Elevation must not be more than 15″ above base lines or home base, and slope must be gradual.

Home Base. A plate of whitened rubber, set into and flush with ground, level with surface of field. (See detailed diagram for dimensions and placement.)

First, Second, and Third Bases. White canvas bags, 15″ square, not less than 3″ or more than 5″ thick, filled with a soft material, and attached to pegs driven into ground. First and third bases should be placed, as shown in diagram, within angles formed by base lines. Second base, as indicated in diagram, should be placed with its center directly over point of angle formed by base lines and with two sides parallel to base lines.

Foul Lines. Consist of (1) extensions of base lines between home and first and home and third to boundary lines of the ground and not less than 10′ above the top of fence or stand; (2) extensions of same base lines from the point where they meet at home base to the backstop line. Must be at least 3″ wide (the portions of the lines behind home base which are dotted in the diagram are understood rather than marked).

Players' Benches. Much be at least 25′ outside players' lines.

Marking. Catcher's lines, foul lines, players' lines, coachers' lines, three-foot lines, and batman's lines must be marked with lime, chalk, whitewash, or other white substance.

Backstop. No official specifications. (Some authorities recommend that the backstop be about 24′ wide, constructed in three sections, with a 12-ft. center section parallel to the backstop line and two 6-ft. side sections turned in toward the diamond, parallel to the base lines, and that a backstop with a top be 15′ or 16′ high, one without a top, 20′ high.)

[**Note:** Semiprofessional and independent games are played on regulation diamond. Official dimensions of a baseball diamond for boys under fourteen years of age are as follows: Distance between bases—82′. Distance across diamond from home plate to second base, or from first to third base, measured from points where base lines meet—115′ 11½″. Pitching distance—50′.]

Softball

Dimensions and Specifications of the Joint Rules Committee, Representing the Amateur Softball Association, the American Physical Education Association, the National Recreation Association, and the Young Men's Christian Association

60-foot Diamond, 12-inch Ball

Over-all Diamond Dimensions. 60′ x 60′. Distance across diamond, through center, from home plate to second base, or from first base to third, measured from points where base lines meet—84′ 10¼″

Additional Space Recommended. No official specifications. (Some authorities recommend allowing 15′ around the diamond and using ground rules.)

Pitching Distance. Men—46′; women—35′; measured as in baseball.

Pitcher's Plate. Same dimensions as in baseball, and also set flush with ground, but may be of rubber or wood. No official specifications regarding elevation.

Home Plate. Same dimensions and placement as in baseball, but may be of rubber or other suitable material.

First, Second, and Third Bases. Same dimensions as in baseball, but second base is placed the same as first and third, according to diagram in the 1944 rules, and bases may be of canvas or other suitable material.

Batter's Boxes. Each 3′ wide by 7′ long. Same placement as in baseball.

Catcher's Box. 8′ 5″ wide by 10′ long. Long sides are 10-ft. continuations of outside lines of batter's boxes. Line forming back of catcher's box is a straight line connecting, and at right angles to, these two sides, and is 8′ 5″ long.

Coachers' Boxes. Indicated by lines 15′ long, parallel to, and 6′ outside, base lines at first and third bases (see Baseball diagram).

Three-foot Line. Same placement as in baseball (beginning midway between home plate and first base), but extended 10′ instead of 3′ beyond first base.

Foul Lines. No official specifications. (It is understood that, as in baseball, right- and left-field foul lines should extend to the boundary lines of the ground, and some authorities recommend a minimum length of 175′.)

Backstop Line. No official specifications. (Some authorities recommend that the backstop line be at least 16′ behind home plate.)

Players' Lines and Benches. No official specifications. (According to some authorities, players' lines and benches should be at least 15′ outside the base lines.)

Marking. No official specifications. (It is understood that the same lines should be marked in white as are so marked in baseball, with the possible exception of players' lines.)

Backstop. No official specifications. (See Baseball. A softball backstop may be constructed like a baseball backstop but need not be more than 12′ high.)

45-foot Diamond, 12-inch Ball

Over-all Diamond Dimensions. 45′ x 45′. Distance across diamond, through center, from home plate to second base, or from first base to third, measured from points where base lines meet—63′ 7″.

Pitching Distance. 37′ 8½″, measured as in baseball.

[**Note.** 45-foot-diamond rules formerly specified slow pitching (16-in. ball) and a pitching distance of 35′, but the 1944 rules make no such provisions and clearly specify that all details other than size of diamond and pitching distance shall be the same for both 60-foot and 45-foot diamonds.]

Football (American)

Dimensions and Specifications of the National Collegiate Athletic Association

Over-all Field Dimensions. 160′ x 360′.

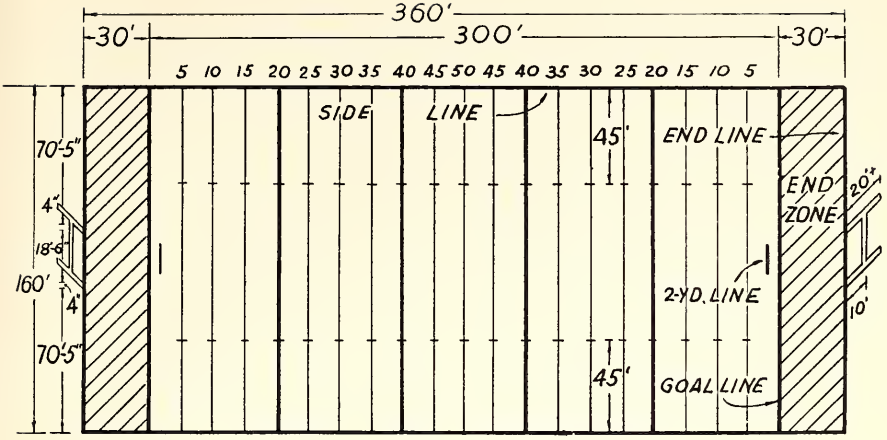
Additional Space Recommended. No official specifications. (Some authorities recommend allowing 20′ on all sides.)

Goals. Height of posts—more than 20′. Height of crossbars—10′, measured to top edges.

[**Note.** In professional football, goals are on the goal lines, but for reasons of safety this practice is not recommended generally.]

Yard Lines. Must be drawn across width of field at intervals of 5 yds. (15′) between goal lines. Each yard line should be intersected at right angles by short lines at a distance of 15 yds. (45′) from each side line.

Two-yard Lines. Short lines of unspecified dimensions, parallel to, and at a distance of 2 yds. (6′) from, each goal line.



Marking. White is preferable; if lime is used, it should be thoroughly slaked. Width of lines is not specified. As indicated in the diagram, which is taken from the one in the official guide, side lines, end lines, goal lines, 20-yard and 40-yard lines may be wider than the other lines. The short lines intersecting the yard lines usually are narrower than all the other lines. As indicated in the diagram, end zones generally are marked with diagonal lines (crisscross lines or lines perpendicular to the end and goal lines also may be used, and the end-zone marking may be in a color to harmonize with the surrounding landscape, if desired).

Markers should be placed at the four intersections of goal lines and side lines; flags with flexible staffs are recommended.

Six-man Football

Dimensions and Specifications of the National Federation of State High School Athletic Associations

Over-all Field Dimensions. 120′ x 300′.

Additional Space Recommended. 15′ on all sides.

Goal Lines. Heavy lines at each end of field, 30′ from end lines respectively.

Goals. Location—on end lines. Height of posts—at least 19′. Thickness of posts—approximately 4″ in diameter. Distance between posts—25′, inside measurement. Height of crossbars—9′, measured to top edges.

End Zones. The areas at each end of field, bounded by end lines, goal lines, and side lines. Should be marked with diagonal lines extending at least 2′ in from goal lines.

Scrimmage Zone. The area bounded by goal lines and side lines.

Side Zones. The areas bounded by goal lines, side lines, and in-bounds lines.

In-bounds Lines. Spot markers on yard lines, 15 yds. (45′) from, and parallel to, side lines. Length of each marker—6″.

Yard Lines. Lines drawn across width of field at 5-yd. (15-ft.) intervals, from goal line to goal line (as in 11-man football). Numbering is from 5 to 40 and from 40 to 5 (corresponding to numbering from 5 to 50 and 50 to 5 in 11-man football), and is indicated on markers placed at least 5 yds. (15′) outside the side lines.

Three-yard Lines. Two lines, each about 1 yd. (3′) long, located in scrimmage zone, 3 yds. (9′) from, and parallel to, centers of goal lines, respectively (corresponding to the two-yard lines in 11-man football).

Marking. If lime is used, it must be thoroughly slaked.

Touch Football

Dimensions and Specifications of the National Federation of State High School Athletic Associations

Over-all Field Dimensions. Standard—160′ x 360′ (regulation football field). Minimum—120′ x 300′ (six-man football field).

Yard Lines. Lines drawn across width of field at 10-yd. (30-ft.) intervals, from goal line to goal line.

[**Note.** If either a regulation or a six-man football field, already marked, is used, yard lines may be left at 5-yd. (15-ft.) intervals. With the exception of the distance between yard lines, the standard touch-football field is the same in every particular as the regulation football field; likewise, the minimum-size touch-football field is the same in every particular as the six-man football field.]

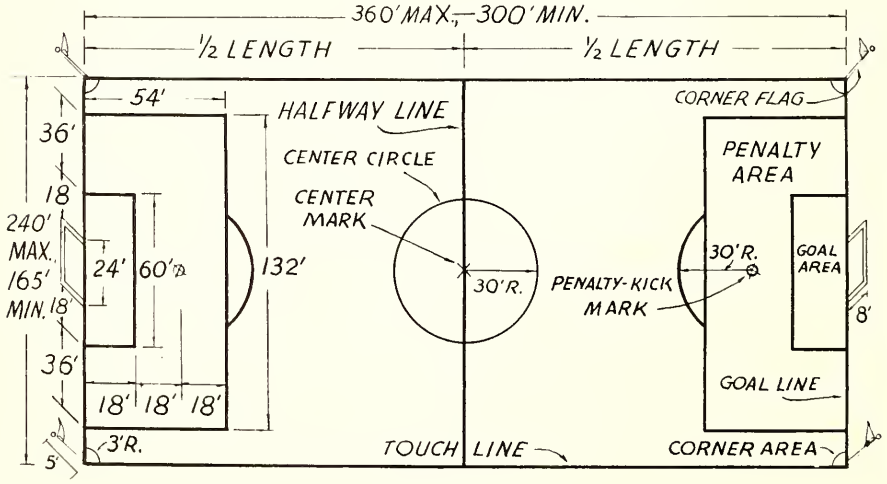
Soccer Football

Dimensions and Specifications of the United States Soccer Football Association, Inc., Affiliated with the Fédération Internationale de Football, and of the Intercollegiate Soccer Football Association of America, Affiliated with the National Collegiate Athletic Association

Over-all Field Dimensions. International—maximum, 240′ x 360′; minimum, 210′ x 330′. Intercollegiate—maximum and recommended, 225′ x 360′; minimum, 165′ x 300′.

Additional Space Recommended. No official specifications. (Some authorities recommend allowing 20′ on all sides.)

Penalty-kick Marks. International—33′ (11 yds.) from the goal lines, respectively. Intercollegiate—36′ (12 yds.) from the goal lines, respectively. No other official specifications.



Goals. Distance between posts—24′, inside measurement. Height of crossbars—8′, measured to lower edges. Usually 4 x 5 stock is used, but 4 x 4 stock also is used frequently. Should be painted white.

N.C.A.A. rules require the use of goal nets attached to posts and crossbars and supported by frames so that the tops extend back on a level with the crossbars for a distance of about 2′, respectively; bottoms of nets must be securely pegged to ground behind posts.

Corner Flags. Flagstaffs must be at least 5′ high, about 1½″ thick (round or square), and have nonpointed tops. Flags should be about 2′ long by 1′ wide, and of a bright color easily distinguishable from the landscape.

Similar markers may be placed on each side of field, in line with halfway line and at least 3′ outside the touch lines.

Marking. Must be clear. Touch lines and goal lines should be white. No other official specifications. (Generally all lines are white and about 2″ wide.)

Codeball-on-the-Green

Dimensions and Specifications of the Amateur Athletic Union

Total Area Recommended. 2 to 20 acres. (However, any golf course or public-park area may be used.)

Surface. Grass or any fairly smooth surface. The course may have fairways, roughs, and hazards, if desired.

Bowls. Official bowls are in the shape of inverted bowls, 41″ in diameter at the base, 7″ high, with openings 18″ in diameter at the top; they are made of chemically hardened fibre or metal. A half set consists of 7 bowls and 14 kick-offs; a full set, of 14 bowls and 28 kick-offs. Bowls are numbered in order.

[**Note.** Crumpled newspapers placed inside the bowls will prevent balls from jumping out when ground is hard and dry.]

Kick-offs. Each kick-off consists of two markers placed in or on the ground, 14′ apart, to indicate direction of bowl to be played. (Ball is placed between the two markers when kick-off is made.) Distance from kick-off to bowl may vary from 10 to 500 yds., or layout may correspond to that of average golf course.

[**Note.** Codeball-on-the-green is a game similar to golf, played by kicking an inflated rubber ball, approximately 6″ in diameter, from a series of tees, or kick-offs, into successive bowls.]

Lacrosse

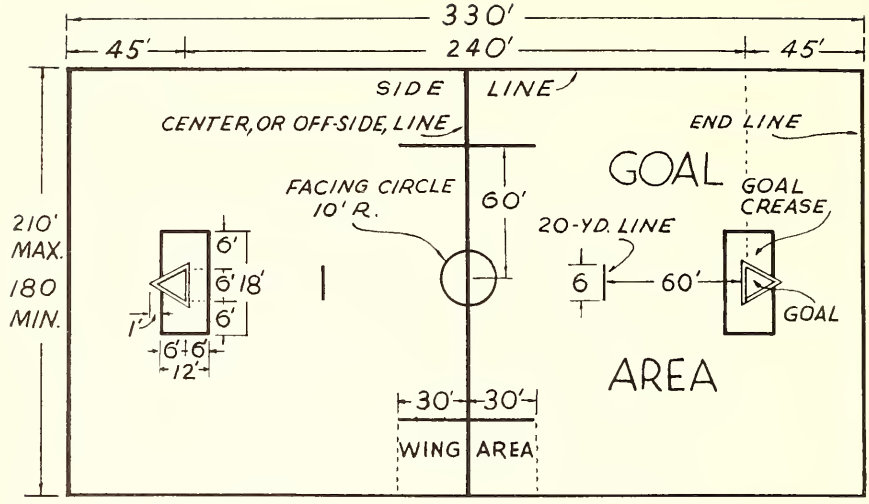
Dimensions and Specifications of the United States Intercollegiate Lacrosse Association

Over-all Field Dimensions. Length—330′. Width—maximum, 210′; minimum, 180′.

Additional Space Recommended. (See Barrier Fence. If fence is not used, authorities recommend allowing 20′ on all sides.)

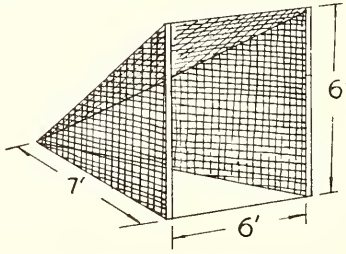
Barrier Fence. The use of a barrier fence at least 5′ or 6′ high, set at least 10′ outside the end and side lines, is recommended.

Goals. (See diagrams.) Goal nets should be made of cord netting with openings of not more than 1½″. Bottom of each net must be held close to ground by pegs or staples and at the center point must extend 1′ behind back line of goal crease.



Goal Areas. The areas at each end of field, lying between 20-yard lines and end lines.

Wing Areas. The areas at each side of field confined between side lines and 60-ft. lines designating said areas.



Detail of lacrosse goal posts and net.

Marking. Lines must be white, and the center, or offside, line should be wider than the others.

Field Hockey

Dimensions and Specifications of the United States Field Hockey Association

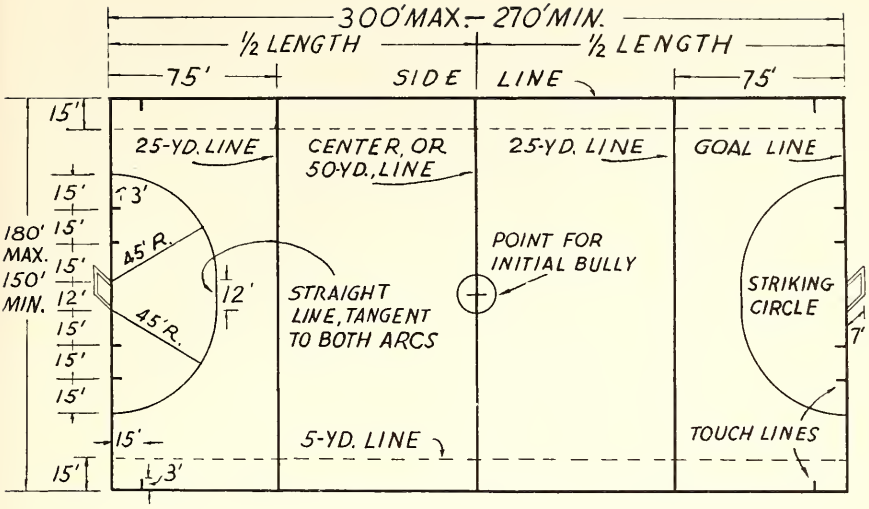
Over-all Field Dimensions. Maximum and official — 180′ x 300′; minimum — 150′ x 270′.

Additional Space Recommended. No official specifications. (Some authorities recommend allowing 20′ on all sides.)

Goals. Posts should be 2″ wide and not more than 3″ deep. Posts and crossbars should be painted white.

Point for Initial Bully. No official specifications. (A cross or a circle may be used; if latter, diameter should be about 1′.)

Twenty-five-yard Lines. For experienced players, 25-yard lines need be marked for a distance of only 7 yds. from side lines.



Marking. All lines 2″ wide. The 5-yard line should be broken.

[**Note.** Where a field less than 300′ long is laid out, 25-yard lines remain 25 yds. from goal lines, the distance between them and the center line—otherwise known as the 50-yard line—being shortened.]

Ice Hockey

Dimensions and Specifications of the National Hockey League

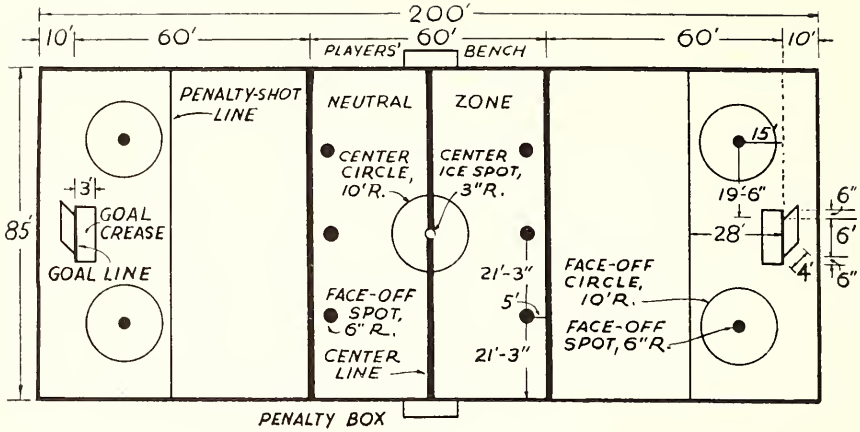
Over-all Rink Dimensions. 85′ x 200′.

Fence. A board fence, or dasher, must surround the rink, forming its outer limits. Height—maximum, 4′, minimum, 3′ 4″, measured from surface of ice. Color—uniform, preferably white. Fence must be free from any obstruction or object that might cause injury.

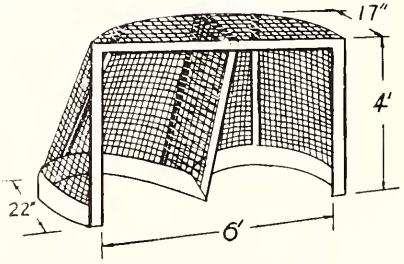
Goals. (See diagrams.) Must be of approved design and material. Distance between posts—6′, inside measurement. Location of posts—10′ from ends of rink, respectively. Crossbars must be of same material as posts. Posts, crossbars, and framework supporting the nets must be painted bright red. Posts and nets must be set in such a way that they cannot be moved.

Zones. The area between the goals must be divided into three equal zones by two lines drawn across width of ice at a distance of 60′, respectively, from each goal line. Each zone in which a goal is located is the defending zone of the team defending that goal, the attacking zone of the opposing team; the middle zone is the neutral zone. Zone lines should be continued vertically on the sides of the fence.

Marking. Center line—12″ wide, red, continued vertically on the sides of the fence. Zone lines—12″ wide, blue, continued vertically on the sides of the fence. Penalty-shot lines—2″ wide, red, continued vertically on the sides of the fence. Goal crease—outlined by a red line, 2″ wide. Goal line—2″ wide, red. Center ice spot and center circle—blue. Face-off spots in neutral zone—red or blue, so placed that they divide the width of the rink into four equal parts. Face-off spots and circles at rink ends—red.



Players' Seats or Benches. Should have a seating capacity of 14, be placed directly alongside ice, as close to center line as possible, and adjacent to dressing rooms.



The "Art Ross" goal net, used by the National Hockey League.

Penalty Bench. Should have a seating capacity of 8, to accommodate timekeeper, penalty timekeeper, scorer, and penalized players.

[**Note.** If ice surface is more than 200' long, space between end of rink and goal line may be greater than 10', but inside dimensions of playing surface should remain as shown in diagram.]

Dimensions and Specifications of the International Ice Hockey League

Over-all Rink Dimensions. Maximum—110' x 250'; minimum—60' x 165'; ideal—85' x 185'.

Fence. A board fence must surround the rink, forming its outer limits. Height—side boards: minimum, 10", preferable, 3' 6"; end boards: minimum, 4'. As far as possible, corners should be rounded.

Goals. (See diagram.) Goal posts must be firmly fixed in ice at a minimum distance of 5', a maximum distance of 15', from ends of rink in which they are located. Framework of each goal cage must be so constructed that it will support a net sufficiently strong to withstand a powerful shot. Tops of goal cages must not be covered by anything, in addition to the netting, that might obstruct the view of the goal umpire.

Goal Lines. Lines 1" wide, traced on or in ice between posts of each goal.

Goal Creases. (See diagram.) Outlines should be 2" wide.

Special-penalty Facing Points. (See diagram.) Markers on outer rim of each goal crease, perpendicular to goal line at its center point. (See Article 119 of international rules.)

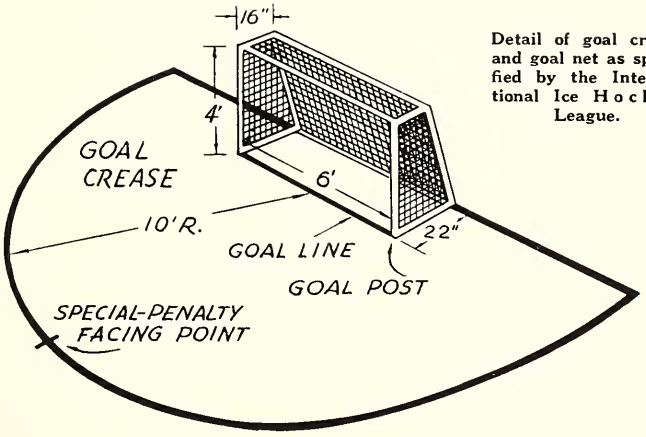
Zone, or Blue, Lines. Two lines, each at least 2" wide, drawn across width of ice, parallel to goal lines, to divide space between goal lines into three zones. If rink is 200' or more long, zone lines should be placed 60' from goal lines, respectively. If rink is less than 200' long, zone lines should divide space between goal lines into three equal zones. Each zone line is known also as the defense line of the team defending the goal nearer it, the attacking line of the opposing team.

Zones. The zones formed by the zone lines are named as follows: the middle area is the center, or neutral, zone; each of the two areas flanking it is the defense zone of the team defending the goal in that zone, the attacking zone of the opposing team.

Face-off Spots. Marks on zone lines, 10' from side boards.

Center Circle. A circle 1' in diameter, drawn in center of rink.

Defense Limits during Special-penalty Face-offs. Marks on ice and on end boards at points 15' to the side of each goal post, marks on ice being in line with each goal line and located between each goal post and the nearer side board, marks on end boards indicating imaginary continuations of ice marks back to end boards. (See Article 119 of international rules.)



Detail of goal crease and goal net as specified by the International Ice Hockey League.

Marking. All lines and marks should be in a dark blue clearly distinguishable under artificial light. All transverse lines should be continued vertically on faces of side boards.

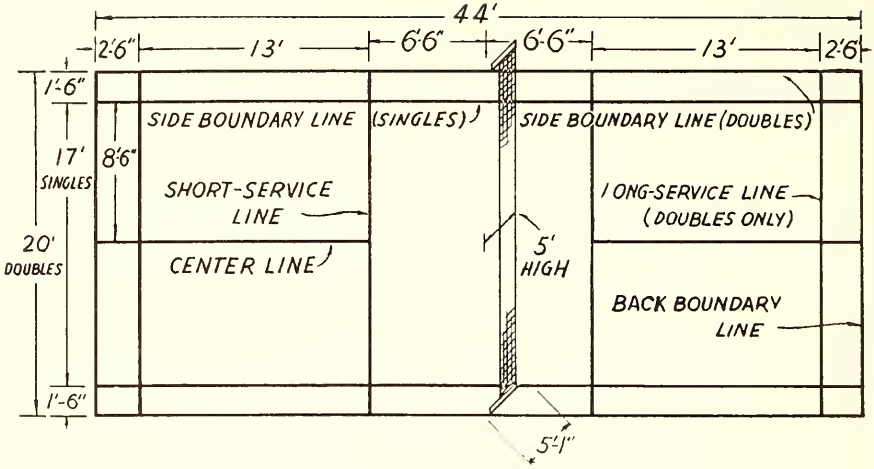
Official Enclosures. Players' benches and a penalty box should be provided, as in National Hockey League specifications. International rules specify, in addition, the provision of enclosures outside the rink, directly behind each goal, for goal umpires.

Badminton

Dimensions and Specifications of the American Badminton Association

Over-all Court Dimensions. Doubles—20' x 44'. Singles—17' x 44'.

Additional Space Recommended. No official specifications. (Some authorities recommend allowing 4' to 5' at sides, 8' at ends.)



Posts. Height—5′ 1″. Location—on side boundary lines. If it is impracticable to place posts on side boundary lines, some method must be used to indicate the position of these lines where they pass under the net, as, for instance, through the use of markers of tape or thin wood, not less than 1½″ wide, fixed to the lines and extending vertically to the net cord. Where such markers are used on a doubles court, they should be set on the side boundary lines for doubles, regardless of whether singles or doubles are being played.

Net. Height, measured to top—5′ at center, 5′ 1″ at posts. Depth—2′ 6″. Material—fine tanned cord of ¾-in. mesh, edged with white tape 3″ wide and doubled over the top. Should be supported by a cord or cable run through the tape and strained over and flush with tops of posts.

Service Courts. Doubles—service court extends from short-service line to long-service line, and from center line to side boundary line for doubles. Singles—service court extends from short-service line to back boundary line, and from center line to side boundary line for singles. Where space does not permit laying out a doubles court, a court may be laid out for singles only, in which case the back boundary lines become also the long-service lines, and the posts, or markers representing them, are set on the side boundary lines for singles.

Marking. White, black, or other distinctly marked lines, each 1½″ wide. All measurements are to outsides of lines, with the exception of those involving the center lines, which are equally divided between right and left service courts.

Hand Tennis

Dimensions and Specifications of the Chicago Park District and from "The New Play Areas" (See Bibliography)

Over-all Court Dimensions. 16′ x 40′.

[**Note.** The court is the same as the deck-tennis court except in width and net specifications.]

Additional Space Recommended. 4′ 6″ at sides, 10′ at ends.

Posts. Height—at least 3′. Location—at least 2′ outside court.

Net. Height, measured to top—2′ 6″ at center. Depth—2′.

Lawn Tennis

Dimensions and Specifications of the United States Lawn Tennis Association

Over-all Court Dimensions. Doubles—36′ x 78′. Singles—27′ x 78′.

Additional Space Recommended. 21′ behind each base line, 12′ beyond each side line. Required in international championships and recommended by the U.S.L.T.A., which also recommends allowing 12′ between adjacent courts. Where available space does not permit following these specifications, U.S.L.T.A. recommends allowing 15′ to 18′ behind base lines and 10′ beyond side lines or between adjacent courts. It is not wise to allow more than 21′ behind base lines or 12′ beyond side lines (if side fencing is used), as larger court area would necessitate too much running after balls going out of bounds.

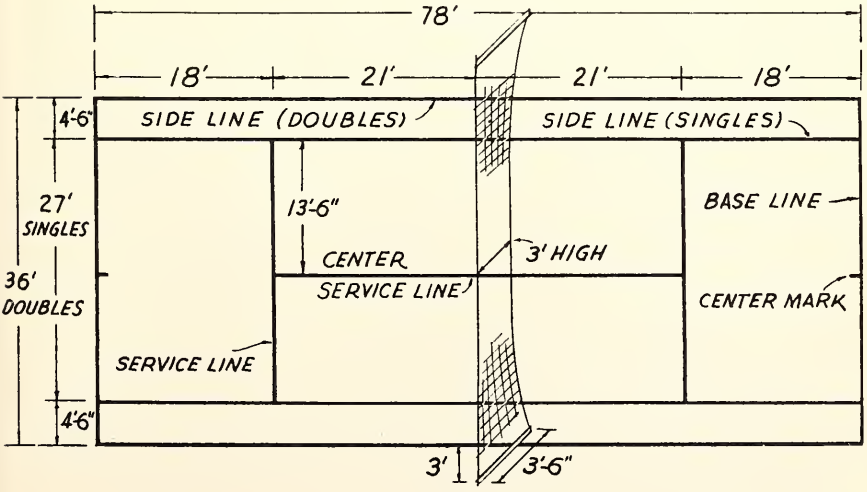
Surface. Clay, stone dust, brick dust, macadam, concrete, grass, etc., or patented fast-drying surfaces. Information on court construction, including the various types of surfaces, on grading, drainage, submaterial, cost, and maintenance, is given in official tennis guide.

Posts. Height—3′ 6″. Location—3′ outside court. Should be set 2′ to 2½′ into ground. May be made of wood or metal.

Net. Height, measured to top—3′ at center, where net should be held taut to playing surface by a strap not more than 2″ wide. Depth—3′. Length—33′ for singles, 42′ for doubles. Must be suspended from a cord or metal cable not more than ⅓″ in diameter, which, together with top of net, must be covered with a band to a depth of 2″ to 2½″ on each side. Cord or cable must be fixed to or stretched over the tops of the posts. Net should touch ground along entire length, and ends should be flush to posts at all points.

Marking. Center marks—4″ long by 2″ wide, drawn from center of each base line into court. Center service line—2″ wide. All other lines—not less than 1″ nor more than 2″ wide, except base lines, which may be 4″ wide.

All measurements are to outsides of lines, except those involving the center service line, which is equally divided between right and left service courts.



Service Side Lines. Those portions of the singles side lines which lie between the service lines.

The portions of the singles side lines which lie between the base lines and the service lines may be omitted in the doubles court.

Backstops. U.S.L.T.A. recommends that backstops be from 9′ to 12′ high, and that they be made of 2-in. mesh, if heavy, hard wire is used, or of 1½-in. mesh, if light, soft wire is used.

[**Note.** Courts requiring extensive maintenance and careful use generally are enclosed by a high fence.]

Paddle Tennis

Dimensions and Specifications of the American Paddle Tennis Association As Given in "Sport for the Fun of It" (See Bibliography)

Over-all Court Dimensions. Doubles—20′ x 44′ Singles—16′ x 44′.

Additional Space Recommended. No official specifications. (Some authorities recommend allowing 6′ at sides, 8′ at ends.)

Surface. Wooden platform. (While official game is platform paddle tennis, played on wooden platform, paddle tennis may be played informally on any level surface.)

[**Note.** Plans for construction of official wooden platform may be obtained from A.P.T.A. Four paddle-tennis platforms may be superimposed crosswise on a doubles tennis court, and, since platform paddle tennis is an all-year, all-weather sport, the area devoted to a tennis court or courts thus may be kept in almost continuous use. Painting the wooden surface (green preferred) and sprinkling sand over the paint while wet makes it possible to use the court even during a light shower. In winter, snow may be swept off the platform and the court used immediately afterwards.]

Net. Height, measured to top—2′ 10″ at center, 3′ 1″ at posts.

Service Lines. Two lines, one on each side of net, parallel to it and at a distance of 12′ from it, extending across court between singles side lines.

Service Courts. 8′ wide by 12′ long.

Back Courts. Doubles—20′ wide by 10′ deep. Singles—16′ wide by 10′ deep.

Alleys between Singles Side Lines and Doubles Side Lines. 2′ wide.

Center Service Line. A line extending lengthwise through center of court, between the service lines.

Back- and Sidestops. Height—12′. Material—wire mesh with openings not larger than 1½″. (Back- and sidestops are required fixtures, since balls are played off them.)

[**Note.** Layout of paddle-tennis court is that of standard tennis court in miniature. The only differences between the two courts are in over-all size, and consequently in the various inside dimensions (proportions are the same, however), height of net, and surface.

The original game of paddle tennis, using a court 18′ x 39′, with service lines 9′ instead of 10′ from the base lines, and a net 2′ 6″ high at the center and not more than 2′ 9″ at the posts, measured to the top, is still played in some places.

Paddle tennis not only may be played on a wooden platform superimposed on a standard tennis court, but also may be played on badminton, hand-tennis, deck-tennis, and volleyball courts, the same net posts serving for all five games.]

Table Tennis

Dimensions and Specifications of the United States Table Tennis Association

Over-all Table Dimensions. 5′ wide by 9′ long by 2′ 6″ high.

Additional Floor, or Ground, Space Recommended. No official specifications. (Some authorities recommend allowing 4′ at each side of table, 8′ at each end.)

Playing Surface (Table). Any material that will give a uniform bounce of not less than 8″ nor more than 9″ when a standard ball is dropped on it from a height of 12″. Should be of a dark color in a nonreflecting finish.

Posts. Height—6$\frac{3}{4}$″. Must be attached to table in such a way that outside limits are 6″ outside the respective side lines.

Net. Height, measured to top—6″ along entire length. Bottom of net should be close to playing surface along entire length. The U.S.T.T.A. approves only nets suspended by a cord. Over-all length of net and suspension—6′.

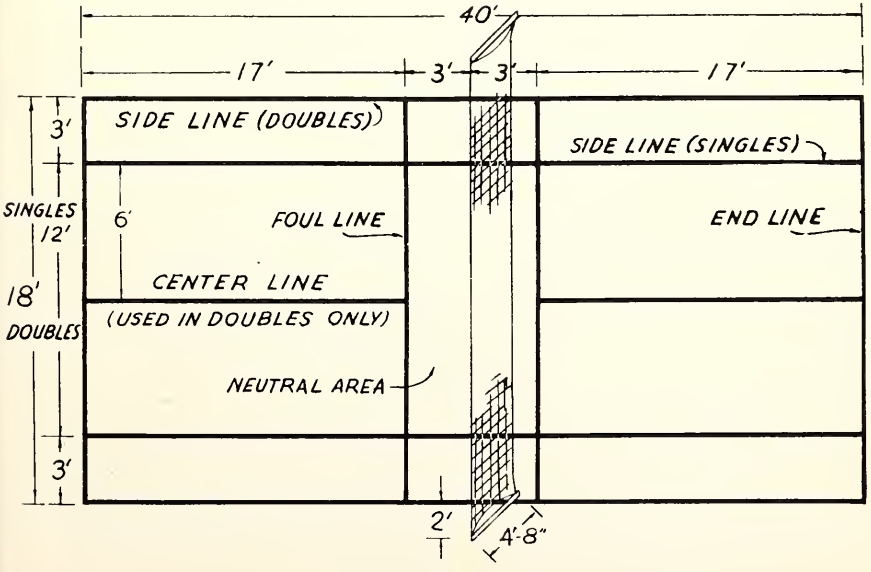
Marking. White lines, $\frac{3}{4}$″ wide, along each edge of table, lines at ends being known as end lines, those at sides, as side lines. For doubles, a service line $\frac{1}{8}$″ wide, marked in white, must divide the playing surface longitudinally into two equal parts.

Deck Tennis

Dimensions and Specifications from "Sport for the Fun of It" and "Active Games and Contests" (See Bibliography)

Over-all Court Dimensions. Doubles—18′ x 40′. Singles—12′ x 40′.

Additional Space Recommended. 4′ at sides, 5′ at ends.



Net. Height, measured to top—4′ 8″ at posts. Depth—1′ 6″. Should be tightly stretched.

Posts. Height—at least 4′ 8″. Location—at least 2′ outside the court.

Volleyball

Dimensions and Specifications of the Amateur Athletic Union and the United States Volley Ball Association

Over-all Court Dimensions. A.A.U. outdoors dimensions—maximum, 45′ x 90′; ideal, 40′ x 80′ (generally used in match contests). A.A.U. indoors dimensions—maximum, 40′ x 70′; ideal, 30′ x 60′ (generally used in match contests). U.S.V.B.A. dimensions—30′ x 60′.

Additional Space Required. 3′ on all sides, free from all obstructions (but see Service Areas). A.A.U. indoors dimensions require an overhead space of at least 15′, free from all obstructions, including gymnasium apparatus.

Service Areas. Each 10′ wide by 6′ deep, its width defined by two short lines behind the end line, on right-hand side of court, its depth understood rather than marked (specified in U.S.V.B.A. rules only).

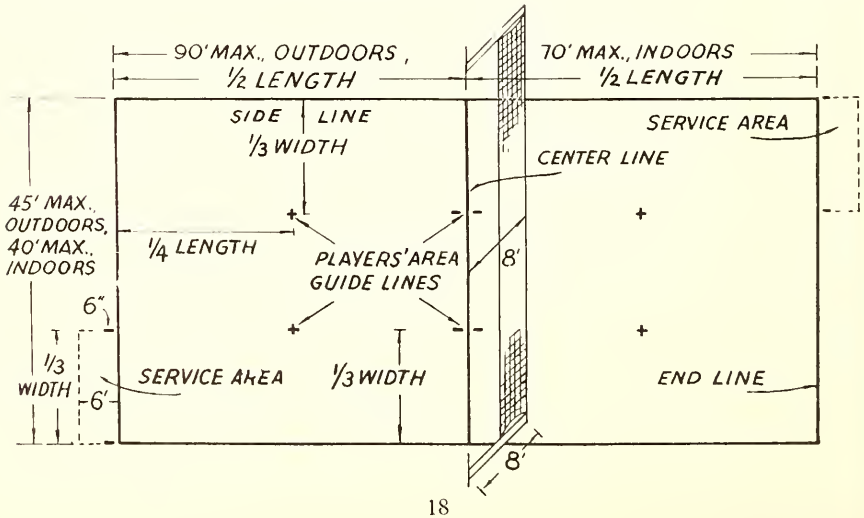
Players' Area Guide Lines. Single lines and crosses as shown in diagram (specified in U.S.V.B.A. rules only).

Net. Height, measured to top—8′ at center. Depth—at least 3′. Must be tightly stretched at all four corners to allow as little sag as possible, and be attached to walls or uprights located entirely outside court.

Official U.S.V.B.A. net is 3′ deep by 32′ long, when stretched; is made of 4-in. square mesh in black or dark brown No. 30 thread; is bound on top, ends, and bottom with ¾-in. manila rope; has a double thickness of white canvas, 2″ wide, sewed to top and ends, with a flexible galvanized cable ⅜″ in diameter run through it; is anchored at the bottom to uprights or floor by means of ropes; has a vertical marker of gauze or other soft material, 2″ wide, running from top to bottom directly above the side lines.

Marking. End lines, side lines, and center line—2″ wide. Service-area lines—6″ long by 1″ wide, located 2″ outside the end lines. Players' area guide lines—single lines: 6″ long by 1″ wide, white, located 2″ from either side of the center line; crosses: formed by white lines 6″ long by 1″ wide.

[**Note.** The only court marking required by A.A.U. rules, aside from end lines and side lines, is the center line.]



Tetherball (Tether Tennis)

Dimensions and Specifications from "Lawn Games" (See Bibliography)

Over-all Court Dimensions. 12′ x 20′.

Total Area Recommended. No official specifications. (Some authorities recommend an area 20′ x 20′.)

Pole. Height—10′. Circumference—7½″ at ground; pole may taper toward top.

Material—wood. Marking—2-in. black band 6′ above ground. Pole should be planted about 3′ in ground and solidly packed.

String. String by which ball is suspended from top of pole must be of heavy braided fishline, long enough to allow ball to hang 7′ 6″ from top of pole, or 2′ 6″ above ground.

Ball. Standard tennis ball, fastened by means of ring made of linen cord to string attached to top of pole.

Foul Circle. A circle with a radius of 3′, drawn on ground with pole as center.

Dividing Line. A line 20′ long, bisecting circle and extending 10′ on either side of center of circle.

Service Crosses. Two crosses marked on ground on either side of, and at right angles to, dividing line, at a distance of 6′ from pole.

Squash

Dimensions and Specifications of the United States Squash Racquets Association and the National Squash Tennis Association

Squash Racquets Singles and Squash Tennis

Over-all Court Dimensions. 18′ 6″ wide by 32′ long by 16′ high.

Playing Surfaces. Material—front and back walls, and door in back wall: clear hard maple; floor and side walls: hard maple flooring. Ventilation—adequate ventilation under the floor is necessary to prevent warping. Painting—walls, door, and ceiling: egg-shell enamel; floor: protective white coating or white zone-marking paint; face of telltale: flat white.

[**Note.** Details concerning construction and painting are contained in the official rules.]

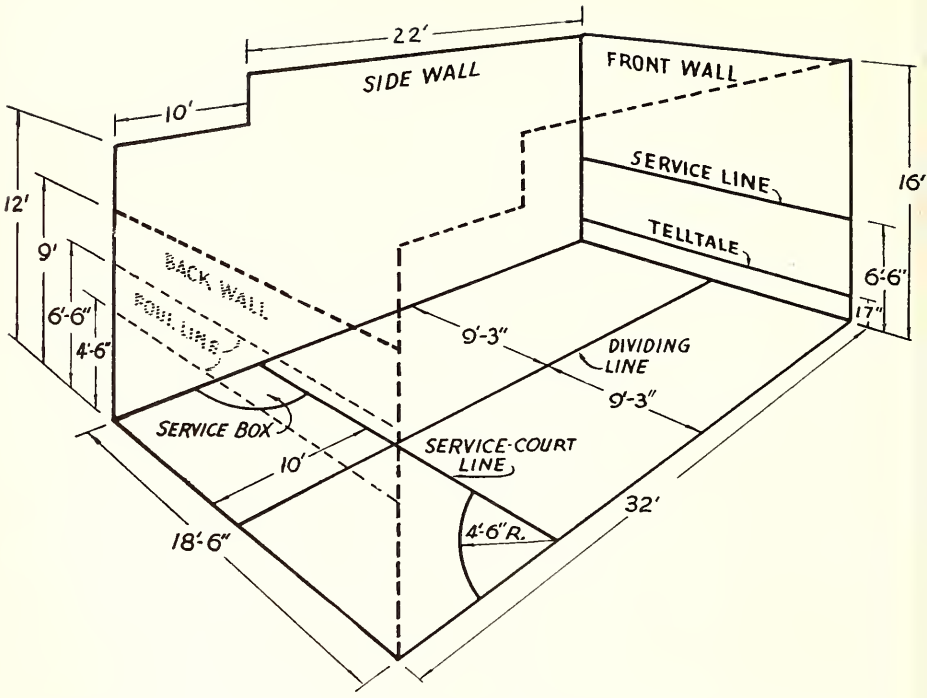
Height of Walls. Side walls—must be 16′ high for a distance of 22′ from front wall; need be only 12′ high from that point to back wall (a distance of 10′). Back wall—may be 9′ high; where court is used only for squash racquets, a height of 6′ 6″ is sufficient. (See Marking.)

Height of Ceiling. At least 18′ to allow for lighting, unless recessed lighting is used, in which case 16′ is sufficient.

[**Note.** Detailed specifications for nonrecessed lighting are given in the official rules.]

Telltale. A strip of metal extending across front wall, its top edge 17″ above floor. Should be made of 18-gauge sheet metal, and should be constructed with a 2-in. bevel at the top, extending out from surface of wall at an angle of 45°, so that face of telltale extends perpendicularly from floor to a height of about 15½″, then slants in toward wall. If properly constructed, telltale will make a ringing sound when struck by ball.

Vent grilles may be installed in lower part of telltale, or holes may be drilled in it for ventilation.



Marking. All lines and bevel of telltale must be painted red (nonbleeding bulletin red is specified), and all lines must be 1" wide. It is suggested that all wall lines except front-wall service line be painted on 1¼-in. round moulding, to deflect balls.

Height of service line on front wall (6' 6") is measured to top of line. Heights of foul lines on back wall (6' 6" and 4' 6", respectively) are measured to lower edges of lines; if court is used only for squash racquets, lower foul line may be omitted. If, on a court used only for squash racquets, back wall is no more than 6' 6" high (see Back Wall), no foul lines will be marked on it.

Distance from back wall to service-court line (10') is measured to middle of line.

If court is used only for squash racquets, dividing service-court line may extend only from back wall to service-court line, instead of entire length of court.

In courts where front and side walls are more than 16' high, wall playing surfaces must be indicated by lines drawn in accordance with court dimensions, measuring to lower edges of lines.

Door. Dimensions—4' 6" high by 2' wide. Placement—as nearly as possible in center of back wall, opening into court. (In general practice, however, door may be any height that wall permits.)

Squash Racquets Doubles

Over-all Court Dimensions. 25' wide by 45' long by 20' high.

Playing Surfaces, Telltale, Door. (See Squash Racquets Singles.)

Height of Walls. Side walls—must be 20' high for a distance of 31' from front wall, need be only 15' high from that point to back wall (a distance of 14'). Back wall—7'. (See Marking.)

Height of Ceiling. At least 22′ to allow for lighting, unless recessed lighting is used, in which case 20′ is sufficient.

Marking. Color and width of lines and other marking are the same as in the singles court. General layout of lines is the same, also, except for dimensions, which are as follows:

Height of service line on front wall, measured to top of line—8′ 2″. Height of foul line on back wall, if wall is more than 7′ high—7′, measured to lower edge of line. If back wall is not more than 7′ high, foul line is unnecessary. Distance from back wall to service-court line, measured to middle of line—15′.

In courts where front and side walls are more than 20′ high, wall playing surfaces must be indicated by lines drawn in accordance with court dimensions, measuring to lower edges of lines.

Dividing service-court line extends from back wall to service-court line.

Handball

(Softball)

Dimensions and Specifications of the Amateur Athletic Union

One-wall

Over-all Court Dimensions. 20′ wide by 34′ long by 16′ high.

Additional Space Required. At least 6′ of clear space beyond side and long lines. (Some authorities recommend extending floor 8′ beyond each side line and 20′ beyond the long line.)

[**Note.** Where a special wall is built outdoors and space is available, courts generally are laid out on either side of the wall. Some authorities recommend leaving a space of 8′ between adjacent courts.]

Playing Surfaces. No official specifications on materials. (Walls and floor generally are of concrete, but bituminous materials also are used.)

Short Line. A line extending across the court, 16′ from, and parallel to, the front wall.

Service Line. Located 9′ behind, and parallel to, the short line (i.e., 25′ from front wall; note that in four-wall handball service line is in front of short line, in one-wall handball, behind). Service line is not drawn across entire width of court, as in four-wall handball, but consists of two lines or markers on either side of floor playing surface, extending from side lines into court, generally for a distance of only 4″.

Long Line. The end of the court, 34′ from, and parallel to, the front wall.

Extension of Side Lines. Side lines usually are extended at least 3′ beyond the long line, although the rules do not require this.

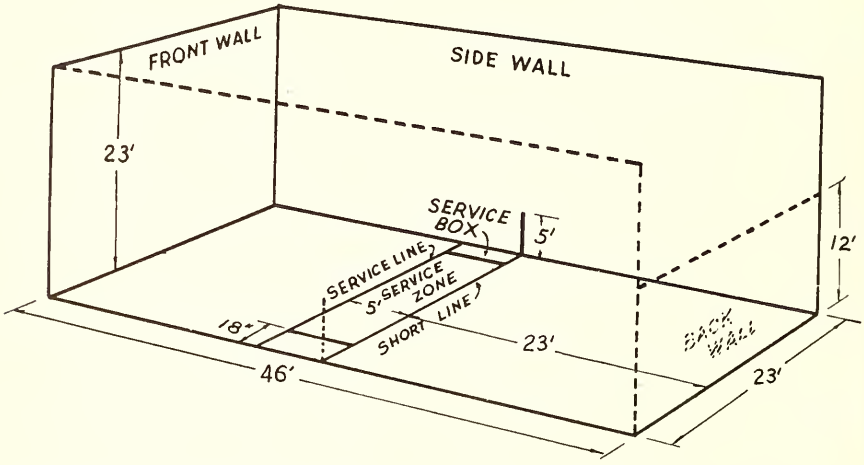
Marking. All lines 1½″ wide.

Four-wall

Over-all Court Dimensions. 23′ wide by 46′ long by 23′ high. Front and side walls only are 23′ high; back wall should be 12′ high, unless there is a gallery, in which case it must be at least 10′ high. Courts of other sizes, as approved by the A.A.U., may be used for championships, but width, length, and height should be in same proportion to each other as in official dimensions.

Playing Surfaces. No official specifications. (According to some authorities, the ideal flooring is hardwood, second choice, softwood. Some authorities recommend that walls be made of plaster finish on brick, concrete, or tile; wood, cement finish on brick, or concrete also may be used. If wood is used, walls should be constructed on heavy studs placed fairly close together, and front wall should be of hardwood flooring.)

Marking. All lines 1½" wide. The short line generally is continued vertically on side walls to a height of 5', although rules do not require this.



Ventilation. No official specifications. (It is advisable to install some kind of ventilating system, if court does not have a skylight.)

Lighting. No official specifications. (Recessed ceiling lights are recommended by most authorities.)

Codeball-in-the-Court

Dimensions and Specifications of the Amateur Athletic Union

Over-all Court Dimensions. Official—maximum, 20' wide by 50' long by 30' high; minimum, 20' wide by 40' long by 24' high. Alternative—any four-wall handball court (see Four-wall Handball).

Service Line. A line drawn across width of court, parallel to, and equidistant from, front and back walls.

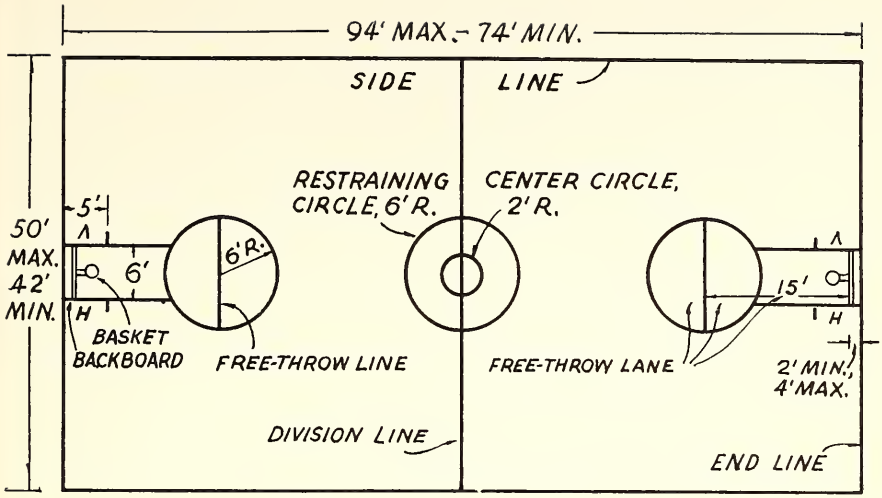
Basketball

Dimensions and Specifications of the Amateur Athletic Union

Over-all Court Dimensions. Maximum—50' x 94'; minimum—42' x 74'. Recommended for college age—50' x 90'; for high-school age—50' x 84'; for junior-high-school age—42' x 74'.

[**Note.** Actual minimum dimensions recognized by A.A.U. are 35' x 60', with provision that minimum dimensions of courts in buildings constructed hereafter be 42' x 74'.]

Additional Space Required and Recommended. A minimum of 3' on all sides, free from all obstructions, is required; an out-of-bounds margin of 10' is recommended where possible.



Backboards. 6′ wide by 4′ deep, set parallel to, and at a distance of 2′ to 4′ from, end lines (men's basketball—minimum, 2′, maximum, 4′; women's basketball—2′), with lower edges 9′ above playing surface. Backboards may be made of plate glass, wood, or any other flat, rigid material. Faces of backboards must be painted white. Use of official fan-shaped steel backboard is permitted.

Baskets. Black metal rings 18″ in diameter, inside measurement, the metal not more than $\frac{5}{8}$″ in diameter, with nets of white cord, not less than 30-thread, nor more than 60-thread, seine twine, suspended from under edges. Each ring must be attached rigidly and at right angles to backboard, so that nearest point on inside edge is 6″ from face of board and 1′ above bottom of board (ring is thus 10′ above playing surface). Net should be so constructed that ball will be checked momentarily when passing through.

"V" and "H" Spaces Outside the Free-throw Lanes. Spaces lettered "V," for "Visiting Team," and "H," for "Home Team," bounded by short lines drawn outside, and at right angles to, lines of free-throw lanes, at a distance of 5′ respectively, from end lines.

Marking. All lines 2″ wide, except free-throw lines, which should be 1″ wide, respectively.

If the court is less than 75′ long, there should be no center division line, but, instead, two division lines, each 40′ from farther end line, preferably marked in a color contrasting to that of other court lines. However, if court is very short, so that these two division lines would fall inside free-throw lines, the additional division lines should be omitted and the free-throw lines themselves extended until they intersect the side lines.

Billiards—Carom and Pocket

Dimensions and Specifications of the Billiard Association of America

Dimensions of Table Bed. Regulation match and tournament table—5′ x 10′. Standard tables—4′ 6″ x 9′, and 4′ x 8′ (the larger is recommended by some authorities for general use in industrial recreation; the smaller is for use where space is limited). Snooker table—5′ x 10′.

Over-all Dimensions of Table Top. No standard dimensions. Over-all length and width of table depend upon width of side and end rails.

Height of Table. $32\frac{1}{2}$" (2' $8\frac{1}{2}$").

Additional Floor Space Recommended. No official specifications. (Some authorities recommend allowing 6' on all sides of table, 5' between adjacent tables.)

Pocket Openings. Corner openings—5" from face of each cushion. Side openings—$5\frac{1}{2}$" from face of each cushion.

Snooker Openings. $3\frac{5}{8}$" from face of each cushion.

Lighting. Provision should be made for an electric-light outlet directly above table.

Bowling

Tenpins

Dimensions and Specifications of the American Bowling Congress

Over-all Alley Dimensions. Length—standard, but not specified, 83'. Width—one alley, 6' $2\frac{1}{2}$"; two alleys, 11' $5\frac{1}{4}$"; four alleys, 22' $7\frac{3}{4}$".

Composition. Alley bed, gutters, kickbacks, and approach—wood.

Additional Space Required. Behind approach—bowlers' setees, minimum, 3'; spectators' seats, each row, 2' 6" to 3'; aisle behind spectators' seats, 3' to 10' and up, depending on size of installation. Behind pit—aisle, approximately 3'; storage space for pins and other equipment, 8'. Side (or center) aisle for pin-boy traffic—whatever space is available. In addition, space must be provided for lockers, checking facilities, lavatories, etc., and rear exits must be provided behind pits.

Approach. Length—minimum, 15', standard 16', measured from, and exclusive of, foul line. Must be clear and level. Tolerance of $\frac{1}{4}$" permitted in depths of depressions or grooves.

Foul Line. Location—60' from center of No. 1 pin spot, measured from edge facing spot. Width—minimum, $\frac{3}{8}$"; maximum, 1". Length—line must extend across entire width of alley to and upon walls or posts adjoining, or within reach of, bowler. Marking—line must be distinctly marked on, or embedded in, alley bed.

Foul-judge Stand. Location—in line with, or immediately beyond, foul line. Required in absence of A.B.C.-approved foul detecting device.

Alley Bed. Length—from foul line to center of No. 1 pin spot, 60' (tolerance of $\frac{1}{2}$" permitted); from center of No. 1 pin spot to end of alley bed proper (not including pit-header, or tail, plank, which see), $34\frac{1}{8}$" (2' $10\frac{1}{8}$"); over-all, from foul line to end of alley bed proper, 62' $10\frac{1}{8}$". Width—maximum and standard, 42" (3' 6"); minimum (legal, but not to be considered in construction), 41" (3' 5"). Surface—must be free from all continuous grooves; maximum tolerance of 40/1,000" permitted in level of surface and depth of depressions.

Tail, or Pit-header, Plank. May be attached to rear of alley bed. Thickness—maximum, 2"; generally, $1\frac{7}{8}$".

Gutters. Location—along each side of alley, beginning at foul line and extending parallel with alley bed to pit. Width—minimum and standard, 9" each; maximum (for alleys less than 42" wide, which are not in general use), 9½" each; over-all width of alley bed and gutters must be 60". Depth—from points in line with, or within 15" ahead of No. 1 pin spot, gutters must be square-bottomed and begin a gradual downward slope, degree of slope to be such that where gutters enter pit they will be not less than 3½" nor more than 3¾" below surface of alley bed. A strip of molding not more than ⅞" high by ¾" wide at a point in line with, or within 15" ahead of, No. 1 pin spot, and increasing gradually to a height of 1½" at a point in line with pin spots Nos. 7 and 10, must be securely fastened to each lower corner of each gutter.

Pin Spots. Number—10. Marking—spots must be clearly marked on, or embedded in, alley bed. Diameter—2¼".

Location of No. 1 spot—60' from foul line and equidistant from side edges of alley bed, measured from center of spot. Location of other spots—behind No. 1 spot, in three rows of two, three, and four spots, respectively. Distance between spots—12", measured from center to center (arrangement thus forms equilateral triangle). Numbering—from left to right in each row. Distance from center of No. 1 pin spot to imaginary line drawn through centers of back row of pin spots (nos. 7, 8, 9, 10)—31⅛" (2' 7⅛"). Distance from center of No. 1 pin spot to pit edge of alley bed proper (not including pit-header plank)—34⅛" (2' 10⅛"). Distance from centers of back row of pin spots (7, 8, 9, 10) to pit edge of alley bed proper—3". Distance from center of each corner pin spot (7 and 10) to inside edge of nearer gutter—3".

Kickbacks, or Side Partitions. Height—maximum, 24", minimum, 18", measured from surface of alley bed. Location—along each side of alley, outside of gutters, running parallel to alley bed from a point in line with, or 15" ahead of, No. 1 pin spot to rear cushion wall. Distance between faces of kickbacks—60", if no fibre plates are attached; 59¾", if fibre plates are attached. Distance from center of each corner pin spot (7 and 10) to face of nearer kickback—12", if no fibre plates are attached; 11⅞", if fibre plates are attached.

Fibre Plates on Kickbacks. Faces of kickbacks may be covered with one layer of either leather or composition fibre not more than ⅛" thick. No other covering is permissible.

Pit. Minimum depth—10", measured from pit floor to surface of alley bed; 9½", measured from top of pit mat to surface of alley bed. Must measure not less than 30" (2' 6") from end of alley bed proper to face of rear swinging cushion.

Rear Swinging Cushion. Must be covered with material of dark color and be so constructed as to prevent pins from rebounding onto alley bed.

Resurfacing Requirements. All alleys upon which sanctioned leagues and tournaments are conducted must be resurfaced at least once every 12 months in accordance with specifications in official rule book.

Pins. Material—each pin must be made of one piece of clear, hard, solid maple. Weight—maximum, 3 lbs. 8 oz.; minimum, 3 lbs.; must not vary more than 6 oz. in each set. Height—15", with an allowable tolerance of 2/64" either way. Diameter—(see official rules). Rim—(see official rules). Bottoms of foreign materials may be attached to bases, with plugs or otherwise, for protection against wear, provided they do not change prescribed dimensions. Marking—only name and trademark of original manufacturer or distributor. Only pins conforming with A.B.C. specifications may be used.

Duckpins

Dimensions and Specifications of the National Duck Pin Bowling Congress

Alley Bed. Width—minimum, 41".

Pit-header Plank. Top edge on side nearer pit must be rounded.

Approach. Length—minimum, 15′ Use of friction member behind, and adjacent to, foul line is permitted, to check sliding, such member to be substantially flush with surface of alley bed. If of black or other distinguishing color, friction member may be installed with forward edge 60′ from center of No. 1 pin spot, in which case such edge becomes foul line.

Foul Line. Width—sufficient to render line plainly visible. Use of electric eye as foul detecting device permitted when installed according to N.D.P.B.C. specifications; light beam must project across alley on straight line directly above approach edge of foul line, and space between beam and floor must not be more than ¼″. In absence of such automatic device, official foul-line judge must be provided.

Gutters. Composition—from a point in line with No. 1 pin spot, wood only. Width—not less than 8½″ each. Shape—round. Depth at point where they enter pit—minimum, 2″, measured from surface of alley bed.

Kickbacks. Minimum distance between faces, at a point in line with pin spots Nos. 7, 8, 9, 10—58″, if no kickback plates are used; 57¾″, if plates are used.

Pins. Material—clear, hard maple, with or without fibre band at point of contact. Weight—not specified; must be as nearly uniform as possible. Height —9 13/32″. Diameter—(see official rules).

[**Note.** With the exceptions noted in the foregoing, the alley specifications are, or may be assumed to be, the same as those for tenpins. In fact, duckpins often are played on tenpins alleys.]

Lawn Bowling

Dimensions and Specifications of the American Lawn Bowling Association

Over-all Green Dimensions. 120′ square.

Surface. Level lawn of bent grass. Grass should be kept about ¼″ high.

[**Note.** The A.L.B.A. booklet "The Construction and Care of Lawn Bowling Greens" contains detailed information. See Bibliography.]

Ditch and Bank. Green should be surrounded by a ditch and bank. There are no official specifications for ditch; a width of 10″ to 15″ and a depth of 2″ to 4″ may be considered average. It is recommended by A.L.B.A. that bank be at least 18″ high above level of green and that it slope away from green at an angle of not more than 120°.

[**Note.** Some clubs use 2 x 10 planks set flush with surface of green as siding for ditch, which then is filled with crushed rock or gravel to within 2″ of surface of green.

An over-all width of 6′ for ditch and bank, measured to point at which downward slope of bank on side away from green has reached green level, may be considered average.

Where one bank serves two adjacent greens, bank and flanking ditches may have an over-all width of about 16′.]

Rinks. Green must be divided into rinks not less than 19′ nor more than 21′ wide, numbered consecutively from one side of green to the other. Center line of each rink should be marked on bank at each end by pin or other device, and the four corners of each rink should be indicated by pins driven into and flush with face of bank. Side boundaries of each rink should be marked by green linen thread drawn tightly across surface of green and attached to pins indicating corners of rink. Where practicable, outside boundary pins of outside rinks should be at least 2′ from ditch.

Mats. Mat upon which players stand when bowling should measure, officially, 14″ x 22″, and must be laid with longer side parallel to line of play. To protect grass as much as possible, most clubs superimpose, or indicate, this mat upon a larger mat measuring 4′ x 8′. There are no specifications regarding material, but generally smaller mat is made of rubber, larger, of canvas.

Bocce

Dimensions and Specifications of the Chicago Park District and from "The New Play Areas" (See Bibliography)

Over-all Court Dimensions. 18′ x 62′.

Additional Space Recommended. 3′ on each side and about 9′ at each end.

Surface. Any level surface, but a mixture of clay and sand is recommended.

End Barriers. Use of low wooden barrier at each end of court is recommended.

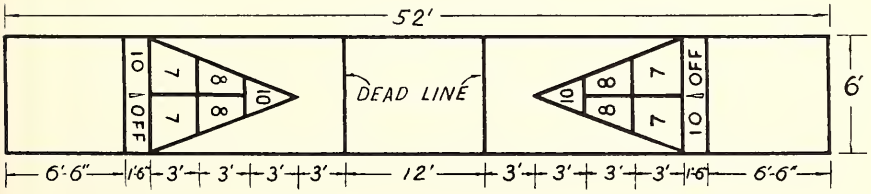
Shuffleboard

Dimensions and Specifications of the National Shuffleboard Association

Over-all Court Dimensions. 6′ x 52′.

Additional Space Recommended. No official specifications. (Some authorities recommend allowing 2′ at each end, 6′ at each side.)

Surface. Concrete or terrazzo, preferably the former. (Wood is unofficial.) [**Note.** See Bibliography for pamphlets on construction.]



Separation Triangles in 10-off Spaces. Length of bases — 3″, respectively. Clearance between 10-off-space lines and point and base of each triangle —½″.

Marking. Width of lines—maximum, 1½″, minimum ¾″, except for triangular divisions in 10-off spaces, outlines of which should be ¼″ wide. All dimensions are measured to centers of lines.

Clock Golf

Dimensions and Specifications from "Lawn Games" (See Bibliography)

Green. A circular area 20′ to 24′ in diameter, or any convenient size.

Additional Space Recommended. No standard specifications. (Some authorities recommend allowing about 10′ around circle, or green.)

Surface. Preferably level lawn, with grass closely cropped. Should be smooth.

Marking. Circumference of circle should be clearly marked, preferably in white. Around outside (or inside) of circumference, markers with numerals from 1 to 12 should be pressed into ground at regular intervals, flush with surface, to resemble face of clock. Points at which markers are placed are known as figure points.

[**Note.** Standard markers may be used, or numerals may be painted or drawn on other suitable markers.]

Putting Hole. Dimensions—4" in diameter and about 4" deep. Placement—at any point between center of circle and circumference.

[**Note.** A simple putting hole may be made by setting a tin can in ground, the top flush with surface; holes should be punched in bottom of can for drainage.]

Modern Croquet

Dimensions and Specifications from "Lawn Games" (See Bibliography)

Over-all Court Dimensions. Length—85'. Width—(see Boundaries).

Surface. No official specifications. (Generally a level, closely cropped lawn.)

Stakes. Diameter—1". Height—11". Distance between final stake and lower stake—70'. Material—wood, or steel covered with hard rubber.

Arches. Number—9. Height— 11". Width—5", inside measurement. Material—5/16-in. steel rod, covered with rubber tubing. Placement—first arch 7' directly ahead of final stake, its middle point on imaginary straight line running from center of one stake to center of other; second arch 7' directly ahead of first; third (first wing) arch 3' ahead, and 14' to left, of second arch; fourth (center) arch 21' directly ahead of second, its middle point on imaginary straight line between stakes; fifth (second wing) arch 18' ahead, and 14' to left, of center arch; sixth arch 21' directly ahead of center arch, its middle point on imaginary straight line between stakes; seventh arch 7' directly ahead of sixth; lower stake (number eight in order of play) 7' directly ahead of seventh arch; third and fourth wing arches (played on the return) are in positions relative to those of first and second wing arches on opposite side of court.

Boundaries. Court is six-sided, its boundaries defined by a cord fastened to six staples. Staples are located 7' 6" behind each stake and 7' 6" outside each wing arch, the staples outside the four wing arches being set on an imaginary diagonal running through the middle points of the wing arch concerned, the center arch, and the wing arch diagonally opposite.

Croquet (American)

Dimensions and Specifications from "Lawn Games" (See Bibliography)

Over-all Court Dimensions. 30' x 60'.

Surface. Level lawn, rolled and closely cropped.

Boundary Lines. Should be defined by strong cotton twine fastened by four substantial corner staples.

Playing Lines. Location—2′ 6″ inside the boundary lines. May be imaginary or marked. If marked, may be drawn with chalk or defined by a cord smaller than that used for boundary lines, wired close to ground.

Stakes. Diameter—about 1¼″. Height—about 1½″. Location—just outside center point of each end playing line. Material—hardwood.

Arches. Number—9 or 10, depending upon whether single or double center arch is used. Height—approximately 10″. Width—4″, inside measurement for beginners, narrower for experienced players. Thickness of wire—at least ½″. Placement—similar to that in roque, with following exceptions: first arch is 8′ from end boundary line (5′ 6″ from end playing line); second arch is 7′ in front of first; side arches are in line with second arch, at a distance of 5′ 9″, respectively, from side boundary lines (3′ 3″ from side playing lines); center arch may be single or double, if double, the two arches are placed as in roque, at right angles to the other arches and 18″ apart.

[**Note.** For firmness, arches should be driven about 10″ into ground. Greater firmness may be achieved through use of hardwood-block or cement bases, as in roque. Arches with square tops are easier to drive into ground than arches with rounded tops.]

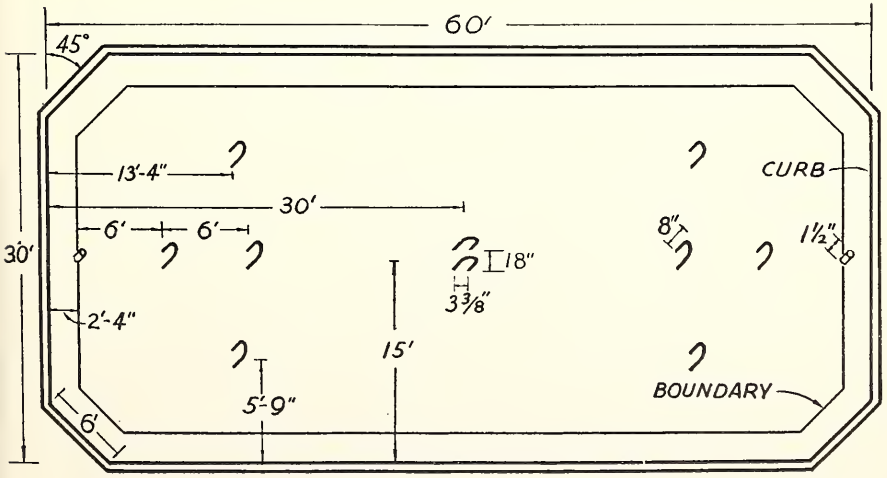
Roque

Dimensions and Specifications of the American Roque League

Over-all Court Dimensions. 30′ x 60′, exclusive of curb.

Surface. 2-in. layer of light loam clay, free from stones, pebbles, and gravel, rolled and tamped until hard, smooth, and level, and lightly sprinkled with fine sand.

Curb. Material—dense concrete. Height—minimum, 5″. Width—minimum, 8″. Length of each side curb, between corner angles—51′ 6″. Length of each end curb, between corner angles—21′ 6″. Corners—length, 6′; angle, 45°. Surface—smooth. Upper edges—rounded. Slant of side facing court—⅜″ from top to bottom (to prevent balls from jumping).



Boundary. Location—2′ 4″ inside curb. Marking—a light indentation in playing surface, made with pointed marker so constructed that ground will not be torn up.

Arches. Number—10. Height—approximately 8″. Width—$3\frac{3}{8}$″, inside measurement (tolerance of 1/64″ plus or minus permitted). Placement—(see diagram); center arches, 18″ apart, set at right angles to other arches. Material—steel, not less than 9/16″ in diameter. Bases—8 x 15 x 6 concrete blocks, sunk 2″ below playing surface.

Stakes. Height—maximum, $2\frac{1}{2}$″; minimum, 2″. Diameter—$\frac{3}{4}$″. Location—outside and just clear of end boundary lines, midway between side boundaries. Material—steel. Bases—concrete blocks, 8 x 10 x 6, sunk 2″ below playing surface.

[**Note.** Details of construction and care of court are contained in the official rules. Wooden curbs have been widely used, but they are not mentioned in the present rules. If it is preferable to construct a wooden curb, details may be found in "Lawn Games" (see Deck Tennis listing in Bibliography). Steel rails sometimes are used in the curbing, as described in an article contained in the official rules book.]

Quoits

Dimensions and Specifications Mainly from "Active Games and Contests" (See Bibliography)

Over-all Court Dimensions. Approximately 5′ x 58″, if official pitching distance (which see) is used.

Additional Space Recommended. No official specifications. (Some authorities recommend allowing approximately 10′ on each side and 11′ on each end.)

Pitching Distance. (Measured from pin at one end of court to pin at opposite end.) Official (according to English and Caledonian rules)—54′; informal (in general playground use)—adults, 30′, youths, 20′.

Pins. Length—maximum, 18″; minimum, 12″. Diameter at top—maximum, $\frac{3}{4}$″; minimum, $\frac{5}{8}$″. Material—steel or iron. Pins must be driven into ground until heads are flush with surface. A small hole should be drilled in exact center of top of each pin for purpose of measuring (all measurements are made by calipers from center of pin to nearest part of quoit).

Circles. Each pin should be set in center of circular area of stiff clay at least 4′ in diameter and 6″ deep.

Marking. Throwing lines sometimes are marked on ground in line with center of each pin and at right angles to axis between pins.

Horseshoes

Dimensions and Specifications of the National Horseshoe Pitchers Association of America and the Amateur Athletic Union

Over-all Court Dimensions. Men—10′ x 50′. Women—10′ x 40′. (This allows for a space of 2′ behind each pitchers' box.)

Adjacent Courts. There must be at least 10′ between stakes of adjacent courts, and in tournament play front foul lines of pitching boxes must be aligned.

Pitching Distance. Men—40′, women—30′, measured between stakes at either end of court.

Pitchers' Boxes. Location—2′ from each end of court, measured to back ends of boxes, respectively. Dimensions—6′ square, inside measurement. Material—frame of wooden joists, filling of potter's clay or other material of like nature, 6″ deep. A stake must be placed in exact center of each box. Clay or other filling of box must be kept in moist condition in area immediately surrounding stake. If desired, a hard surface may be used, in which case an area 31″ wide by 43″ long must be left open around stake, to be filled with clay. In outdoor courts, wooden frame must be set into ground flush with surface, except at front of box, where it must extend approximately 1″ above surface of ground; foul lines surrounding each box must be clearly defined. In indoor courts, boxes must not stand more than 6″ above floor.

Throwing Platforms. No official specifications. (Wooden or asbestos throwing platforms about 1′ wide sometimes are placed over surface, and along side edges, of pitchers' boxes, to give sure footing.)

Stakes. Material—iron or steel. Diameter—1″. Each stake must extend 12″ above surface of pitcher's box, with an incline of 3″ toward stake at opposite end of court.

Ceiling. No official specifications. (Indoor courts must have a ceiling height of at least 12′; height of 15′ is preferable for players of only average skill.)

[**Note.** The space occupied by a battery of outdoor horseshoe courts may be put to multiple use by laying out courts for volleyball, badminton, or any of the tennis variants in the area between pitchers' boxes. Net posts may be placed between adjacent pitchers' boxes, and, if badminton posts are used, the same posts may serve for any of the games suggested.]

[**Note.** Games played with rubber horseshoes are popular in industrial-recreation programs, particularly as a form of indoor lunch-hour recreation. Stakes may be placed any convenient distance apart, may be of any convenient material and dimensions, and may be inserted in permanent sockets installed in flooring, thus permitting quick setting up of courts in the aisles of a plant at lunch hour.]

Rifle and Pistol Shooting

(.22 Caliber)

Dimensions and Specifications of the National Rifle Association of America

Indoor (and Junior Outdoor) Rifle Range. Distance from firing points to targets—50′. Minimum distance between firing points—4′ 6″

Outdoor Rifle Range. Distance from firing points to targets—100 yds. (300′). Minimum distance between firing points—5′. Additional target emplacements should be installed at distances of 50 yds. (150′) and 50 m. (164.04′) from firing points to permit use of range for the three standard distances interchangeably.

Indoor Pistol Range. Distance from firing points to targets—50′. Minimum distance between firing points—4′.

[**Note.** Indoor rifle range meets requirements for indoor pistol range.]

Outdoor Pistol Range. Distance from firing points to target—50 yds. (150′). Minimum distance between firing points—4′. Additional target emplacements should be installed at distance of 25 yds. (75′) from firing points to permit use of range for the two standard distances interchangeably.

[**Note.** Where space permits, indoor pistol range may be constructed according to specifications for outdoor range.]

Over-all Width of Ranges. Depends upon number of firing points. If space permits, a minimum of 10 firing points is recommended.

Additional Space Required and Recommended. Indoors—approximately 6′ to 10′ behind targets to accommodate backstops, and not less than 15′ to 20′ behind firing line to accommodate shooters.

Outdoors—from 15′ to 20′ behind firing line to accommodate shooters, plus space occupied by natural or artificial backstop.

Backstops. Indoors—sandbox backstop, steel backstop, or commercial bullet traps may be used. Simplest sandbox backstop is made from packing case at least 2′ thick, filled with sand; extra thickness of heavy boards nailed over front of box will give extra protection and longer wear. Steel backstop consists of a ⅜-in. steel plate supported at angle of 30° to 45° at distance of about 2′ behind target. A sandbox should be placed on floor in front of steel backstop to catch deflected bullets. Whatever type of backstop is used, surrounding area in target end of room should be protected against stray shots.

Outdoors—Ideal backstop is hillside at least 10′ to 20′ high for 50-foot range, at least 30′ high for pistol or 100-yard rifle range, with slope of 45°, or 1′ of rise for each 2′ of slope. If natural slope of hill is not steep enough, a square section should be cut out at base, immediately behind targets, to form perpendicular surface which will catch bullets and hold them without danger of ricocheting; the making of such a cut in backstop hill is recommended generally, regardless of slope of hill, as additional safety precaution. There must be no rocks, stones, glass, or pieces of metal on hillside in bullet-impact area behind targets. Rocks which cannot be removed must be covered with at least 6″ of soil, which should be sodded or seeded. Unless range is fenced, all brush which might conceal a person from view of shooters must be cleared away from an area extending to top of hill, or, in the case of very high hills, from an area extending at least 100 yds. up slope behind targets and at least 50 yds. to side of each end target.

If a hill is not available, or if available hill is not high enough, an artificial backstop may be used. May be bunker of dirt and sand, wooden crib filled with dry earth or sand, or wooden barrier. If used alone, artificial backstop should correspond to natural backstop in height and should extend 6′ beyond each end target for 50-ft. firing, correspondingly more for 100-yd. firing. If backstop is a bunker, it should be 4′ thick; if a crib, it should contain a fill not less than 2′ thick, preferably 3′ thick. There must be no rocks, stones, glass, or pieces of metal in bunker or in earth or sand fill of crib. Fill of crib should be inspected regularly for holes. Wooden-barrier type of backstop may be made of discarded railroad ties or of cut timber squared off on side facing firing line; should be not less than 2′ thick, and ties or timbers should be replaced when worn to point of inadequacy.

Targets. All targets are of paper or tag board. There are many sizes and types for different kinds of shooting and different ranges.

Target Frames and Carriers. Various sizes and types. All can be constructed locally from official plans; many can be purchased complete, including installation service.

Ventilation. Indoor ranges should be provided with sufficient ventilation to carry off powder fumes.

Lighting. Indoor ranges should be lighted over entire length. Modern ranges usually provide even, indirect lighting over entire range or fluorescent lighting over targets, indirect lighting over firing line and behind it, with increasingly brighter lights between firing line and targets.

[**Note.** Detailed information regarding range construction, including the pamphlets "Rifle and Pistol Shooting for Recreation and Defense" and "Instructor's Manual for Junior Rifle Clubs," are available from the National Rifle Association. See Bibliography.]

Bait and Fly Casting

Dimensions and Specifications of the National Association of Angling and Casting Clubs

Targets. Material—wood, aluminum, rubber, or other suitable material. Shape—perfect circle with open center. Diameter—outside: 30″; inside: minimum, 27″. Color—in wet-fly events: may be uniform; in other events: must be red, white, blue, green, and yellow (one target in each color). Must float not more than $\frac{7}{8}$″ above surface of water.

Placement of Targets. Accuracy bait casting—5 targets scattered at random on water, anchored at distances unknown to casters, nearest target 40′ to 45′ from casting box, farthest target 75′ to 80′ from casting box. Targets must not be bunched.

Wet-fly accuracy casting—5 targets placed in straight line on water, anchored at distances of 35′, 40′, 45′, 50′, and 55′, respectively, from casting box, measured to centers of targets.

Dry-fly accuracy casting—5 targets scattered at random on water, anchored at distances unknown to casters, nearest target 20′ to 25′ from casting box, farthest target 45′ to 50′ from casting box. Targets must not be bunched.

Skish bait casting—10 targets scattered at random, anchored at distances unknown to casters, at points not less than 40′ outdoors or 35′ indoors, nor more than 80′ outdoors or 65′ indoors, from casting box. Each target has its own casting point, enabling ten casters to cast simultaneously. If only 5 targets are available, competitors may be rotated from targets 1 to 5 and again from 1 to 5, provided targets 1 and 5 are set at different distances for second casting (all targets may be moved, if desired).

Skish fly casting—5 targets at distances unknown to casters, placed between 20′ and 40′ from casting platform.

[**Note.** In events in which targets are placed at distances unknown to casters, it is customary to scatter targets tentatively beforehand and move them just before casting starts.

For official indoor skish bait casting or informal regulation bait casting done indoors, a minimum ceiling height of 35′ and a minimum space of 10′ behind casting points are required.

Fly casting rarely is done indoors because as much space is needed behind casting point as in front of it.

Good indoor targets can be made from 30-in bicycle tires or from 1-in. hose filled with sand.]

Distance Bait Casting. Casting is done on lawn. Length of each cast is computed from casting box to point where plug falls.

Distance Fly Casting (Single-handed) and Salmon Fly Casting (Two-handed). Caster stands on platform and makes his casts on water, parallel with measuring line (which see). Length of each cast is measured from platform to point reached by fly.

Casting Points and Platforms. In events cast on water, the surface of every platform, or the ground level at every casting point, must be not more than 18″ above surface of water. Casting on lawn (or any other land surface) must be done from ground (or floor) level.

Casting Boxes. In all accuracy events casting boxes must be 4′ square, with outlines marked.

Distance-fly Measuring Line. A floating board or series of floats on which points of distance from casting point are marked off at 5-ft. intervals, beginning at 80′ and continuing to at least 180′.

Skeet Shooting

Dimensions and Specifications Mainly from the Rules of the National Skeet Shooting Association, the Pamphlet "How, Where, When To Get Going with Skeet," and "Handbook on Shotgun Shooting" (See Bibliography)

Total Area Required. Roughly, 323 yds. x 600 yds. (969′ x 1,800′). This allows for a danger zone in front of shooting stations, with a radius of 300 yds. (900′) from station 8, and for layout of shooting stations on an arc with a radius of 15 yds. (45′) from station 8, as well as for 8 yds. (24′) of additional space behind shooting stations for walk, pull stand, shooters, and spectators.

Surface of Field. No official specifications. (Any level surface may be used. Outline of shooting stations and walks [see diagram] usually is laid out in concrete, gravel, or other suitable surfacing. Some authorities recommend that walks be laid 2 yds. [6′] behind stations and that stations be located on projections of walk surfacing. A width of about 3′ is considered ideal for walks and projections, and some authorities recommend that projections have round ends 3′ in diameter [see Shooting Stations]. Ground around walks often is sodded or seeded.)

Danger Zone. Dimensions—approximately 300 yds. x 600 yds. (900′ x 1,800′). May be a swamp, marsh, body of water, or any other area where falling shot will do no harm or damage. In contrast to archery range, skeet field should have as clear a background as possible. If shooting is entirely over land, safety precautions such as fencing, the posting of warning signs, and the clearing away of concealing brush are suggested. If shooting is over water, warnings posted on buoys, or other safety measures, may be required, and, for purposes of salvage, trap houses should be far enough from water's edge to permit recovery of unbroken targets.

Shooting Stations. Circles 3′ in diameter (18″ radius), marked on ground (see Surface) as follows, all measurements to centers of circles: stations 1 through 7, on arc with radius of 15 yds. (45′) from station 8, or 21 yds. (63′) from crossing point of targets (see Lines of Flight), equidistant from each other (26′ 6″ apart); stations 1 and 7, 40 yds. (120′) apart on straight line through station 8.

[**Note.** Formerly, a small shell box nailed to top of post about 3′ high was placed beside each shooting station, and a squad box was indicated on ground behind each station. Today, however, neither device is in general use.]

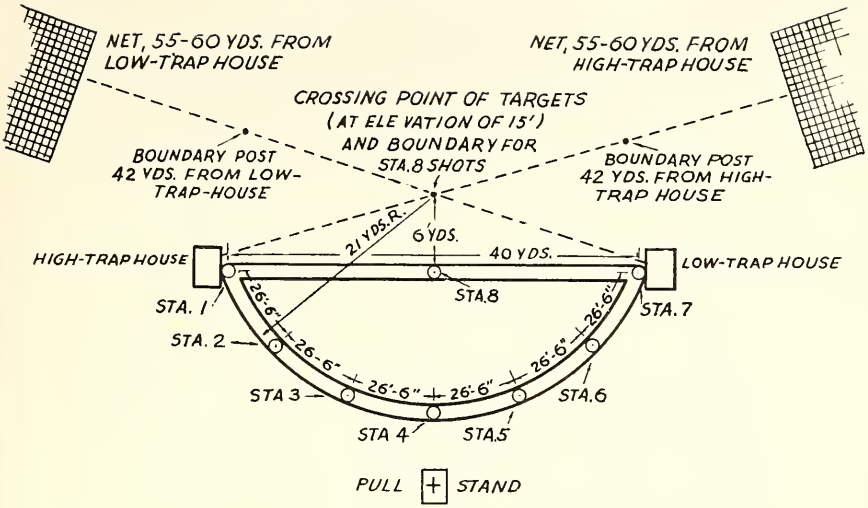
Trap Houses. Location, measured from centers of station circles to front sides of trap houses (i.e., sides having target doors)—high-trap house: 18″ behind station 1; low-trap house: 18″ behind station 7 (i.e., fronts of trap houses are tangent to circles of shooting stations). Heights from which targets are thrown—from high-trap house: 10′; from low-trap house: maximum, 3′. Size—any convenient size to house throwing equipment. Construction—ordinary frame construction with sheathing of $\frac{7}{8}$-in. stock; fronts and sides facing shooting stations may be either double- or single-boarded and should be sheathed with sheet metal; trap doors need not be larger than 12″ x 18″; roofs should be covered with metal or shingles.

On adjacent fields, one trap house can serve as low-trap house of one field and high-trap house of adjacent field, or vice versa, by putting target doors in two sides and installing two traps.

Traps. Style—any of various mechanical devices.

Pull Stand. Style—any of various mechanical devices. Location—generally, but not necessarily, at convenient distance behind station 4.

[**Note.** Details concerning construction of trap houses and pulling devices, as well as instructions on laying out of field, are contained in the pamphlet "How, Where, When To Get Going with Skeet." See Bibliography.]



Lines of Flight. Targets from both high- and low-trap houses must pass over point in direct line with stations 4 and 8, and 6 yds. outside station 8. In still air, targets must pass within 3′ of a point 15′ directly above this spot and must carry a distance equivalent to a minimum of 55 yds. (165′) or a maximum of 60 yds. (180′) on level ground from trap house from which thrown.

Target Nets, or Backstops. May be placed at distances of from 55 yds. (165′) to 60 yds. (180′) along lines of flight from each trap house, to catch unbroken targets. Use is recommended wherever possible, as it results in great saving of targets.

Shooting Bounds. Marking—boundary posts or other markers placed 42 yds. (126′) from each trap house, along lines of flight, and at a point 6 yds. (18′) outside station 8, in direct line with stations 4 and 8. (No hit may be counted from stations 1 through 7 after target has passed point 42 yds. from trap house from which thrown, and no hit may be counted from station 8 after target has passed over point in direct line with stations 4 and 8.)

Safety Enclosure. Sides of field, from trap houses to points in line with station 4, and back of field, at a distance of about 8 yds. (24′) behind station 4, should be enclosed by a guard railing or hedge.

Safety Fences. Adjacent fields should be separated by high board fences extending from sides of trap houses facing shooting stations to points in line with stations 3 and 6 (approximate minimum length). Fences should be about 8′ high and from 1″ to 2″ thick, depending upon whether hardwood or softwood is used, and cracks between boards should be stripped with 2-in. or 3-in. boards.

Trapshooting

Dimensions and Specifications Mainly from the Rules of the Amateur Trapshooting Association and "Handbook on Shotgun Shooting" (See Bibliography)

Total Area Required. Roughly, 317 yds. x 600 yds. (951′ x 1,800′). This allows for a danger zone in front of firing points, with a radius of 300 yds. (900′) from firing point 3 (at the 16-yd. firing distance) and for layout of handicap firing points 9 yds. (27′) behind the 16-yd. firing points, as well as for 8 yds. (24′) of additional space behind handicap firing points for pull stand, shooters, and spectators.

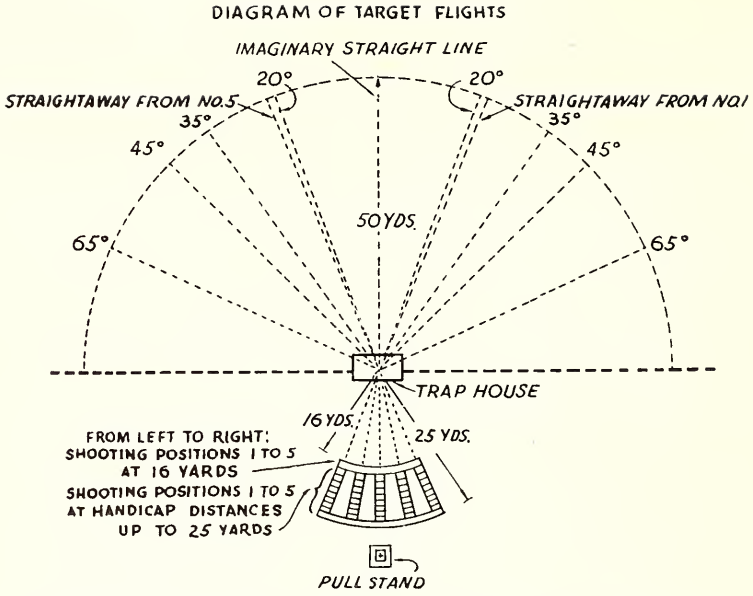


Diagram of Target Flights (See text), showing angles of straightaways from firing positions numbers 1 and 5, measured from imaginary straight line through position 3 and center of trap house, when positions are each 3 yards apart; when positions are each 5 yards apart the angles of these straightaways are more nearly 45°.

Surface of Field. No official specifications. (Any level surface may be used. Outline of firing points [see diagram] usually is laid out in concrete, gravel, or other suitable surfacing. A width of 3′ is considered ideal for the strips of surfacing. Ground around surfaced outline often is sodded or seeded.)

Danger Zone. Dimensions—approximately 300 yds. x 600 yds (900′ x 1,800′). May be a swamp, marsh, body of water, or any other area where falling shot will do no harm or damage. (See Skeet Shooting for other recommendations.)

Firing Points. Location—for single-target shooting without handicap, and double-target-shooting: on arc with radius of 16 yds. (48′) from center of trap house (or point from which target begins flight); for single-target shooting with handicap: on arcs with radii of from 17 yds. (51′) to 25 yds. (75′), in progression by yards. Distance apart at 15-yd. firing distance—official: 3 yds. (9′); in general practice: 3 yds. or 5 yds. (15′). Width—official: 16″; in general practice: 36″ (i.e., shooter must stand not more than 8″ or 18″, depending upon width used, to either side of center of firing point).

Length of Target Flight. Maximum—52 yds. (156′); minimum—48 yds. (144′); in general practice—50 yds (150′).

Target Elevation. Maximum—6′, minimum—12′, at a point 10 yds. (30′) in front of trap, measured on imaginary straight line through center of position 3 and center of trap.

Angles of Flight. In general practice—right-hand targets: straightaway from imaginary line through center of firing point 1 and center of trap; left-hand targets: straightaway from imaginary straight line through center of firing point 5 and center of trap. Official—for single-target shooting: legitimately within an area of 65° to right and left of imaginary straight line drawn through center of firing point 3 and center of trap; preferably within an area of 45° to right and left of line; for double-target shooting: legitimately

between 20° and 65° to right and left of same imaginary straight line, preferably 35° to right and left of line.

Marking of Target Bounds. To aid in distinguishing between targets thrown in and out of bounds, stakes at least 3′ high should be placed on arc of imaginary semicircle having a radius of 50 yds. (150′) from center of trap, in accordance with angles of flight. Officially, stakes should indicate the 45° and 65° angles, as described, for single-target shooting, the 20° and 65° angles for double-target shooting.

Trap. Style—any of various mechanical devices.

Trap House. Placement—may be entirely above ground or partly below surface. Size and construction—if above ground: (see Skeet Shooting); if below ground: a dugout so constructed as to afford ample protection to person working trap.

Pull Stand. Style—any of various mechanical devices. Location—a convenient distance behind firing position 3.

Distance between Adjacent Fields. Minimum—approximately 50 yds. (150′) between trap houses.

Safety Enclosure. (See Skeet Shooting.)

Safety Fence. (See Skeet Shooting. A similar fence may be used between adjacent trap fields, if desired.)

Archery

Dimensions and Specifications, Except Where Noted, of the National Archery Association

Standard Rounds

Length of Range. Depends upon round being shot. Distances for adults are from 30 yds. to 100 yds., for juniors, from 20 yds. to 50 yds.

Width of Range. Depends upon number of adjacent targets. Officially, targets should not be less than 5 yds. apart, if space permits. In general practice, targets may be only 3 yds. apart, if space is limited.

Additional Space Recommended. No official specifications. (Most authorities recommend providing a clear space of 25 yds. behind targets, free from all obstructions, including rocks or stones, which might break arrows falling wide of mark, and a space of about 10 yds. on each side of range, measured from outside of each end target.)

Surface. No official specifications. (Outdoors—any fairly level field; indoors—wooden—not concrete—floor.)

Background. No official specifications. (A background of trees, hills, or buildings, which should not be less than 25 yds. behind targets, will aid archers in aiming at the 100-yd. distance.)

Roping. No official specifications. (Authorities recommend roping off the range, including additional space allowed behind targets and on sides of range.)

Shooting Line. No official specifications. (It is recommended generally that a fixed shooting line be marked across entire width of range and that targets be moved to required distances, starting with the longest distance of round being shot. This procedure is followed in N.A.A. tournaments. Line is usually white.)

Points of Aim. Height—not more than 6″, measured from ground or floor. Material—must be soft, if points of aim are placed under or behind targets. (Points of aim generally are white markers and usually are placed in front of targets.)

Targets. Material—round bast of spirally sewn straw or rush, covered with face having 5 concentric circles. Over-all diameter — 48″ (radius — 24″). Diameter of bull's-eye—9.6″ (radius—4.8″). Width of each surrounding band—4.8″. Colors (from bull's-eye out)—gold, red, blue, black, white; white band is edged with narrow band, or "petticoat," of some other color, to define outer edge (not included in width of white band or diameter of target). Height—center of bull's-eye 4′ above ground or floor. Targets should be so placed on stands that they will tilt backward slightly at top.

Target Stands. Material—softwood. Design—fronts of legs flat. Marking—by color or number, numbering to be in groups of three: A-1, A-2, A-3; B-1, B-2, B-3; etc.

Flight Shooting

Dimensions of Field. Approximately 200 yds. x 600 yds. (length must be approximately 100 yds. longer than N.A.A. record for event).

Roping. Field must be roped off on all sides except that from which archers shoot. Outside this rope must be a 5-yd. space for archers' equipment. This space should be bounded by another rope to keep spectators back from equipment.

Shooting Positions. Officially, flight must be from series of pegs set in ground at least 15′ apart, colored or numbered as are target stands in regular target shooting. In general practice, shooting positions seldom are more than 6′ apart.

Shooting Line. Length—minimum, 20 yds. (In general practice, line extends across width of field, its length depending upon number of contestants, and is marked in white.)

Flight-shooting Space. A space of not less than 10 yds. behind shooting line. Must have only one entrance.

Foul Line. Must be marked across width of field, 1 yd. ahead of shooting line.

Clout Shooting

Range. Men—180 yds. Women and juniors—120 yds.

Target. A target face marked on ground with white lines. Dimensions—those of standard archery target reproduced in the ratio of 1′ to 1″, as follows: over-all diameter—48′ (radius—24′); diameter of bull's-eye—9.6′ (radius—4.8′); width of each surrounding band—4.8.′ Center of bull's-eye must be indicated by flag of single color plainly visible from shooting line.

Wand Shoot

Range. Men—100 yds. Women—60 yds.

Target. Slat of softwood or other material that will prevent arrows from rebounding. Width—2″. Height—6′, measured from surface of ground.

Archery Golf

(Not a recognized N.A.A. event.)

Area Required. Any golf course or a course specially laid out, allowing approximately 20 to 24 acres for a 9-target course.

Surface. Any rolling meadow. Should be mowed frequently within radius of 30 yds. from each target, to reduce loss of arrows.

Targets. Sometimes consist of white cotton balls, about 4″ in diameter, attached to tops of sticks set in ground. Sometimes consist of cardboard or other discs, $4\frac{1}{4}$″ in diameter, attached to four sides of bales of straw stood on end and held upright by stakes driven into ground. Targets measuring 36″ or 48″ in diameter also are used by some clubs, these targets having a bull's-eye with a diameter of $4\frac{1}{4}$″, a red ring with an outside diameter of 12″, and no other color but white from outside of red ring to petticoat.

Wrestling

Dimensions and Specifications of the Amateur Athletic Union

Mat. Surface dimensions — minimum, 18′ square. Thickness — maximum, 3″; minimum, 2″. Must be firm beneath the feet and covered with oversheet of soft canvas, edges of which must be securely fastened so as to insure smooth surface.

Platform. If platform is used, there must be no posts or ropes on or about it, and it should extend at least 4′ beyond edge of mat on all sides.

Boxing

Dimensions and Specifications of the Amateur Athletic Union

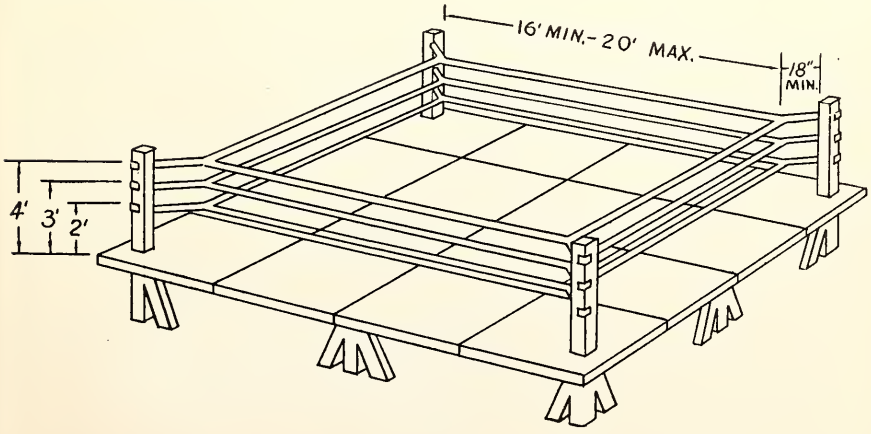
Over-all Ring Dimensions. Maximum—20′ square; minimum—16′ square.

Floor. Must extend at least 2′ beyond lowest rope. Entire surface must be padded to a thickness of at least 1″ with felt or other soft material which does not tend to become lumpy with use. A top covering of canvas, duck, or similar material, untreated, must be tightly stretched over padding and laced to ring platform.

Ring Ropes. Thickness—minimum, $\frac{3}{4}$″. (Preferred way of attaching ring ropes to ring posts is by means of metal rods, threaded to permit tightening of ropes.)

Ring Posts. Must be properly padded and at least 18″ removed from ring ropes (see diagram).

Steps. Ring must be provided with suitable steps for use of contestants, handlers, and officials.



Track and Field

Dimensions and Specifications of the Amateur Athletic Union

General Track Specifications

Curb. Inner edge of track must be solid curb about 2″ above level of track. Edge of curb should be rounded. Curb may be of wood, rope, cement, or other suitable material.

Inclination of Track. Maximum allowable—0.1 per cent.

Lanes. In all outdoor championship races of any distance under and including 200 m. (218 yds. 2′ 2″), each competitor must have a separate course, or lane, at least 3′ wide, marked with whitewash lines 2″ wide. In all indoor championship races of any distance under and including 300 m. (328 yds. 4″), each competitor must have a separate course at least 3′ wide, suitably marked. A width of 4′ is recommended for lanes wherever possible.

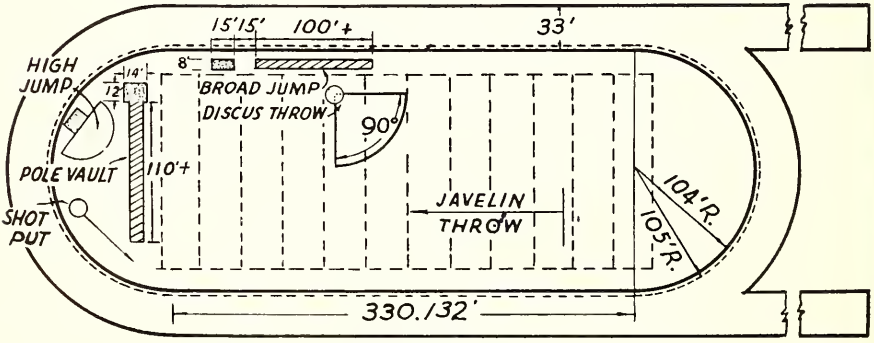
Competitors' distances in inner lane are measured, as is length of track itself, upon an imaginary line 12″ from inner edge, or curb, of track. Competitors' distances in outer lanes are measured upon an imaginary line 8″ from the inner boundaries of their respective lanes.

Starting Points for Races Starting on Curve. (See A.A.U. track and field rules for tables of handicaps.)

Starting Blocks. May be used in any track event, not to aid runners, but to protect track and expedite program. Must be constructed entirely of rigid materials and be so made that they can be put in place and removed readily and without damage to track.

Starting and Finish Lines. In all straightaway events, distances are to be measured from outside of starting line to inside of finish line. Finish lines must be drawn on ground, across track, from finish post to finish post. Maximum width of finish lines is 2″, but it is recommended that such lines be as narrow as character of track and running conditions permit. On an indoor track, finish lines should not be wider than thickness of finish posts (about ¾″).

Finish Posts. Height — 1.37 m. (about 4′ 6″). Width — 7 cm. (about 3″). Thickness—2 cm. (about ¾″). Placement—with width at right angles to track. Must be of rigid construction.



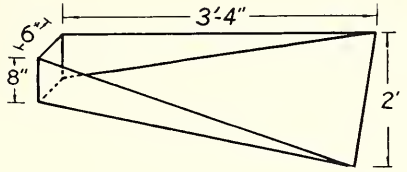
A suggested track-and-field layout, suitable for construction around a football field.

Pole Vault

Length of Runway. Not specified, but a minimum length of 125′ is suggested for championship competition.

Take-off Ground. Must be level.

Pole-planting Pit. A competitor may dig a hole at the take-off, not more than 1′ in diameter, for a pole-planting pit, or a wooden or metal box, or stop-board, may be used (see diagram below); box must be flush with surface of ground at both ends.



Uprights. Style—any. Distance apart—maximum, 13′; minimum, 12′.

Pegs Supporting the Crossbar. Shape—round, of uniform thickness, not more than ½″ in diameter. Must be free from notches or indentations of any kind. Must extend horizontally not more than 3″ from faces of uprights.

Crossbar. Material—wood. Shape—triangular, of uniform thickness, each side measuring 1 3/16″. Ends must project not more than 6″ beyond supporting pegs. Measurements are to be made to upper side of bar at its lowest point.

Vaulters' Pit. Surface dimensions—approximately 12′ x 14′. Placement—with long side parallel to crossbar. Suggested depth — about 3′. Suggested filling—on bottom, loose cinders to height of 2′; on top, shavings, to height level with surface of ground on sides, to height 8″ above surface of ground in center.

Broad Jump

Length of Runway (Running Broad Jump). Not specified, but a minimum length of 125′ is recommended for championship competition.

Take-off Board. A 4 x 8 wooden joist, at least 4′ long, laid flat and sunk flush with surface of ground at a distance of not more than 15′ from pit. Must be painted white.

Scratch Line. Outer edge of take-off board. For a distance of about 4″ in front of scratch line, ground should be sprinkled with soft earth or sand to an elevation ½″ higher than that of take-off board.

Pit. Surface dimensions—approximately 8′ x 15′. Placement—with long side parallel to runway. (See Pole Vault for additional suggestions.)

High Jump

Length of Runway (Running High Jump). Unlimited, but a minimum length of 50′ is recommended for championship competition.

Take-off Ground. Must be level. It is suggested that ground within a radius of about 35′ in front of uprights be leveled off for take-off.

Uprights. Style—any, provided uprights are rigid. Distance apart—maximum, 13′; minimum, 12′.

Crossbar Supports. Shape—flat and rectangular. Dimensions—1½″ wide by 2⅜″ long. Must be so attached that narrow end of each faces opposite upright. Ends of crossbar should rest on supports in such a way that bar will fall readily if touched by jumper.

Crossbar. Material—wood. Shape—triangular, each side measuring 1 3/16″.

Pit. Surface dimensions—approximately 12′ x 14′. Placement—with long side parallel to crossbar. (See Pole Vault for additional suggestions.)

Discus Throw

Circle. Diameter—maximum, 8′ 2½″, inside measurement. Circumference must be outlined in band iron, steel, or wood, sunk almost flush with surface of ground. If metal is used, it should be ¼″ thick by 3″ deep; if wood, 3″ thick by 2″ deep. Top edge of metal or wooden band must be painted white, and surface of ground inside circle must be of firmly packed earth or clay. In indoor competition, circle may be drawn on floor. Ground inside circle must be firmly packed earth or clay.

Sector. A 90° sector (or quadrant) must be distinctly marked on ground, with a radius of about 125′ from center of circle (see diagram). Outer ends of two outside (marked) radii should be defined by flags.

Javelin Throw

Length of Runway. Not specified, but a minimum length of 80′ is proposed for championship competition.

Scratch Line. A board 12′ long by 2¾″ wide, sunk flush with surface of ground.

Shot Put

Circle. Diameter—7′, inside measurement. (See Discus Throw for other specifications.)

Stop-board. Dimensions—4′ long by 4½″ wide by 4″ high. Must be painted white and firmly fastened to ground in middle of front half of circumference of circle. Material—wood.

Sector. (See Discus Throw.)

Weight Throw

Circle. (See Shot Put.)

Barrel Head Used in Throwing for Height. Diameter—3′. Placement—suspended horizontally in air.

Hammer Throw

Circle. (See Shot Put.)

Cage. Use of an enclosure, or cage, is strongly recommended, as well as placing of cage outside the regular athletic field on which other track and field events are taking place. Shape—circular. Diameter—minimum, 27′, inside measurement. Height—minimum, 7′. Width of opening—approximately 23′. Screening material—2¼ x 4½ diamond mesh wire, using ⅜-in. wire. Mounting of screen—on pipe uprights set 30″ into ground and not more than 8′ apart. (Cage may be demountable, with uprights made to fit into sockets permanently installed in ground.) Diameter of pipe—2½″.

Sector. (See Discus Throw.)

Hurdle Races

Height and Placement of Hurdles. In 65-m., 70-yd., and 120-yd. races—3′ 6″ high, placed 10 yds. (9.144 m.) apart, with first hurdle 15 yds. (13.72 m.) from starting line.

In 220-yd. and 200-m. races—10 hurdles, each 2′ 6″ high, placed 20 yds. (18.29 m.) apart, with first hurdle 20 yds. (18.29 m.) from starting point.

In 110-m. race—10 hurdles, each 3′ 6″ high, placed 10 yds. (9.14 m.) apart, with first hurdle 15 yds. (13.72 m.) from starting point and last hurdle 46′ (14.02 m.) from finish post.

In 440-yd. and 400-m. races—10 hurdles, each 3′ high, placed 38.277 yds. (35 m.) apart, with first hurdle 49.213 yds. (45 m.) from starting point.

Construction of Hurdles. Material—wood or metal. Each hurdle must consist of two bases and two uprights supporting a rectangular frame reinforced by one or more crossbars, the uprights being attached to extreme far ends of bases (i.e., to the ends farther from starting point). Crossbars may be of adustable height, but must be rigidly fixed at required height for each event. Hurdles must be so designed that a force of at least 8 lbs., applied to center of top edge of crossbar, is required to overturn them. To give hurdles required stability at any height, adjustable weights may be placed on ends of bases farther from uprights (i.e., the ends nearer starting point of race). Extreme length of bases—27½″, respectively. Extreme width of hurdles—3′ 11″, respectively. Total weight of each hurdle—minimum, 22.22 lbs.

Marking of Hurdles. Top bar of each hurdle must be black-and-white striped.

Hop, Step, and Jump

Length of Runway. Not specified, but a minimum length of 125′ is recommended for championship competition.

Take-off Board and Scratch Line. (See Broad Jump.)

Steeplechase Race

Number of Jumps. 5, including a water jump, to every ¼ mile.

Hurdles. Height—3′. Recommended width—approximately 12′. Hurdles should be heavy enough so that they will not overturn easily. Hurdles at water jumps must be firmly fixed.

Water Jump. Surface dimensions—12′ x 12′. Depth of water—2′ 6″ at hurdle, lessening gradually to level of field at farther end.

Relay Races

Starting Zone. The space between lines drawn on either side of, and 10 yds. from, starting line of each relay.

Swimming and Diving

Dimensions and Specifications of the Amateur Athletic Union

Pool Length. Indoors—For record-making purposes, the A.A.U. recognizes three types of pools: (1) the 20-yard-course; (2) the short-course (25 yds. to 50 yds.); (3) the long-course (50 yds. and up). Ideal pool length: 25 yds. (75′); if a longer competitive-course pool is desired, a length of 55 yds. (165′) is recommended. Outdoors—ideal, 55 yds. (165′); if a longer pool is desired, next standard length is 110 yds. (330′).

Pool Width. Indoors—not less than 36′ (permitting six 6-ft. lanes) to 42′ (permitting six 7-ft. lanes). Outdoors—may vary from 54′ (permitting six 9-ft. lanes) to an ideal of 75′ (which allows a 25-yd. crosscourse).

Pool Depth. Shallow end—3′. Diving end—springboard diving: minimum, 10′, under board; platform diving: minimum, 4.3 m. (a meter is 39.37″), for a distance of 2 m. behind and 10 m. in front of a vertical dropped from front of 10-meter platform, and for a distance of 4 m. to each side of verticals dropped from outside edges of 10-meter and 5-meter platforms.

Starting Platform(s). Minimum height—18″. Maximum height in indoor competition—2′ 6″. Maximum height in open water—5′. Surface covering—cocoa matting or similar material.

Gutters. May be placed on sides and ends of pool. Drains should be provided with shut-off valves, in order that water in pool may be maintained at constant gutter level at gutter lip during competition, to give a smooth surface.

Ladders. Must be removable or recessed.

Pool Deck. Height—maximum, 12″, minimum, 9″, measured from surface of water. Width of side decks is governed by usage. If sufficient gallery space is allotted, width of side decks need be only 6′. If side decks are to accommodate movable bleachers, width must be sufficient not only to accommodate bleachers, but to permit free movement of competitors and officials. Deck space on diving end must be sufficient to accommodate diving equipment and permit free movement of competitors and officials.

Marking. Middle of each swimming lane should be marked on bottom of pool by a line at least 10″ wide and in a color distinctly contrasting to general color of pool. It is recommended that swimming-lane lines be crossed by horizontal lines running across width of pool at a distance of either 4′ or 5′ from each end of pool, and that distinct markings indicating finish lines of such distances as 220 yards and 440 yards be placed on surface of pool deck.

Ceiling Height. Minimum—22′ above surface of water (there must be no obstructions below this height).

Lighting. It is important to have adequate overhead lighting, with concentration over pool.

Springboards. Height—1 m. (39.37″) and 3 m., respectively. Length—minimum, 14′; preferable, 16′. Width—20″. Material—wood, covered along entire length with cocoa matting. Front end of each springboard must project at least 1 m. beyond edge of pool and must slant upward from base end, the degree of slope to be $\frac{3}{8}$″ for each foot of lineal length of board; board must be so installed that degree of slope will remain constant even though fulcrum is moved to various positions. National championships require mechanically adjustable fulcrums.

Diving Platforms. Height—5 m. and 10 m., respectively; variations of 10 per cent permissible. Length — minimum, 5 m. Width — minimum, 2 m. Covering — cocoa matting. Front end of 10-meter platform must project 2 m. beyond edge of pool and 1 m. beyond end of 5-meter platform immediately underneath, which latter must project 1 m. beyond edge of pool. Backs and sides of each level must be surrounded by a hand railing, and each level must be accessible from ground by stairs (not ladders). Platforms must be rigid.

Condensation. No official recommendations on combatting condensation. (Condensation may be minimized by adequate ventilation and the insulation of walls and ceiling. Fairly rapid changes of air will reduce moisture content, while temperature differential between air and walls and ceiling can be reduced by keeping room temperature as low as possible without discomfort, as well as by insulating walls and ceiling, particularly when these are exterior.)

Sanitary Requirements. No official specifications. (Pools should be constructed and regulated in conformity with requirements of state in which they are located.)

Acoustics. No official specifications. (Reflection of sound from walls and ceiling can, and should, be reduced through use of sound-absorbing materials. Breaking up of ceiling area through use of beams also will reduce reverberation. It is generally advisable to start the sound-absorbing material on the walls at a height of 5′ or 6′.)

[**Note.** Construction of pools according to A.A.U. standards is strongly urged, in order that pools may be used for official competition, if desired. The Olympic Pool in Los Angeles may be cited as a model pool.

For large outdoor pools, installed for the accommodation of not only employees but their families, a multiple-unit plan is recommended, comprising competition pool, diving pool, general pool, and wading pool. It is possible to reduce the number of separate units by combining the competition and diving pools, or even the competition, diving, and general pools, providing standard dimensions and specifications are followed, to allow use of the pool for competition only, when desired. The construction of separate pools for swimming and diving is a safety measure worth considering; next best plan in this connection is the construction of a T- or L-shaped pool, so that diving can be more or less isolated from general swimming. A separate wading pool is always advisable.

The area given over to an outdoor pool may be utilized for other sports in off seasons through the provision of an over-all covering, the surface of which can be laid out in courts for basketball, tennis, shuffleboard, etc. An indoor pool may be equipped with an automatically controlled over-all covering, making it possible to use the room in which the pool is located as a gymnasium. An example of this type of installation is to be found in the Beverly Hills High School, Beverly Hills, Calif.

See Bibliography for booklet on construction details.]

Water Polo

Dimensions and Specifications of the Amateur Athletic Union

Distance between Goals. Maximum—90′; minimum—57′.

End Boundaries of Field of Play. Must be at least 1′ behind each goal.

Width of Field of Play. Maximum—60′.

Goals. Location—at least 1′ inside each end boundary and equidistant from side boundaries. Width between posts—10′. Height of crossbar—3′ above surface of water, when water is 5′ or more deep; 8′ from bottom of pool, when water is less than 5′ deep. Nets must be attached to goal posts in such a way as to enclose entire goal area and hang below water surface; back of each net must be at least 1′ behind goal line and must be hung from height of crossbar. Posts and crossbars must be of wood or iron, rectangular in shape, with each side measuring 3″, and must be painted a single distinctive color; if suspended, must be rigid.

Goal Lines. Imaginary lines running across fronts of goals and extending out to side boundaries.

Penalty Lines. At distances of 2 yds. and 4 yds., respectively, from goal lines, and parallel to them, penalty lines must be clearly marked on both sides of field of play, imaginary lines being understood to continue between them, across width of field.

Half-distance Line. Midway between the two goals, lines indicating the half distance must be clearly marked on both sides of field of play, an imaginary line being understood to continue between them, across width of field.

Ice Skating (Speed)

Dimensions and Specifications of the Amateur Skating Union of the United States

Dimensions of Standard 880-foot, or 6-lap, Track. Number of laps per mile—6. Length of 1 lap—880′, measured on imaginary line 2′ outside the pole line, or inside boundary of track. Length of straightaways—204′ 4½″, respectively. Radius of curved ends, measured from centers of imaginary lines connecting and perpendicular to termination points of straightaways, at each end of track (see diagram of track layout under Track and Field)—73′ to pole line, 75′ to skating line (imaginary line 2′ outside pole line, on which all skating distances are measured). Width of track, or skating area—minimum, 15′, measured from skating line to outer boundary (this allows room for only four competitors, however [see Individual Skating Lanes], and therefore a width of at least 18′ is recommended by A.S.U.). Width of track layout, measured on imaginary line running through area inside track, perpendicular to long axis of track—146′ from pole line to pole line; 150′ from skating line to skating line. Length of track layout, measured on imaginary line running through middle of area inside track, parallel to long axis of track—350′ 4½″ from pole line to pole line; 354′ 4½″ from skating line to skating line.

Dimensions of Standard 660-foot, or 8-lap, Track. Number of laps per mile—8. Length of 1 lap—660′, measured as on 6-lap track. Length of straightaways—141′ 6″, respectively. Radius of curved ends, measured as on 6-lap track—58′ to pole line, 60′ to skating line. Width of track, or skating area—same as on 6-lap track. Width of track layout, measured as on 6-lap track—116′ from pole line to pole line; 120′ from skating line to skating line. Length of track layout, measured as on 6-lap track—257′ 6″ from pole line to pole line; 261′ 6″ from skating line to skating line.

Total Area Recommended. For 6-lap track—190′ x 400′. For 8-lap track—160′ x 300′.

Surface. No official specifications. (Ice should be kept smooth by scraping between races, particularly on turns.)

Individual Skating Lanes. A skating lane 3½′ to 4′ wide should be allowed for each skater (skaters do not remain in individual lanes, however, as in championship track races, and lanes are not marked).

Marking. Straightaways and turns should be marked with flags at frequent intervals along pole line. On an outdoor track, flag sockets should be pieces of rubber hose frozen into holes drilled in ice (length of pieces of hose depends somewhat upon depth of ice, but pieces about 9″ long are average, so inserted into ice that they extend 5″ beneath the surface, 4″ above). On an indoor track (because of shallowness of ice) flags must be placed in small blocks of wood (generally about 3″ or 4″ square) frozen into ice, and rubber-hose sockets may or may not be used; corners of wooden blocks must be cut off.

Official number of flags for a 6-lap track is 54; for an 8-lap track, 48. Fewer flags are used in general practice, however—generally, 4 or 5 along each straightaway, 4 at each end to mark turn, and 2 at start and finish, respectively, of race being skated, one on inside and one on outside of skating lane. Starting and finish lines should be marked on ice in blueing between the flags at either side of track. All flags on inner boundary of track should be slanted away from skating lane (toward area inside track).

Location of Starting and Finish Points on 6-lap Track. 220-yard dash—starting point: 7′ 9¾″ before beginning of first straightaway; finish point: 7′ 9¾″ beyond termination of second straightaway (in other words, starting and finish points lie on imaginary straight line perpendicular to long axis of track). All other races—starting and finish points lie on halfway points of straightaways, 440 yds. being 1½ laps, 880 yds. being 3 laps, etc.

Location of Starting and Finish Points on 8-lap Track. All races—starting and finish points lie on halfway point of straightaway, 220 yds. being 1 lap, 440 yds. being 2 laps, 880 yds. being 4 laps, etc.

[**Note.** Skating is always to left around track.]

Roller Skating (Speed)

Dimensions and Specifications of the Amateur Roller Skating Association

Size of Track. Minimum—24 laps per mile; championship—14 laps per mile.

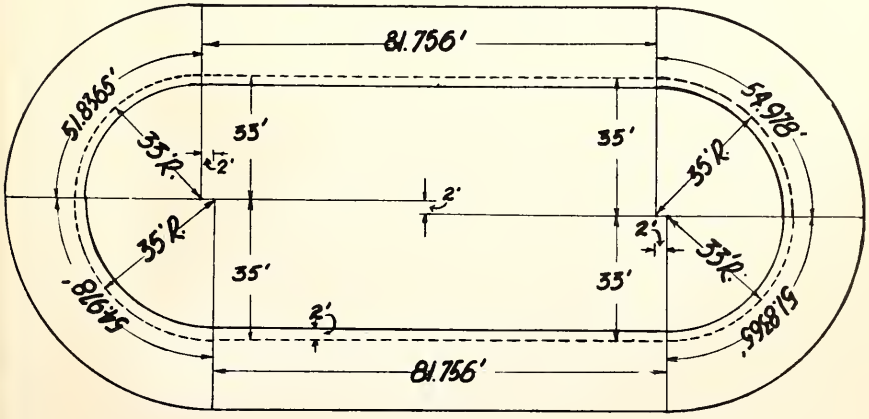
Dimensions of 14-lap Track. Length of 1 lap—377.143′, measured on imaginary line 2′ outside inner boundary of track. Width of track, or skating area—minimum, 15′, measured from skating line (this allows room for only four competitors, however [see Individual Skating Lanes], and therefore a width of at least 18′ is recommended). Width of track layout, measured on imaginary line running through area inside track, perpendicular to long axis of track—64′ from inner boundary to inner boundary; 68′ from skating line to skating line. Length of track layout, measured on an imaginary line running through middle of area inside track, parallel to long axis of track—145.756′ from inner boundary to inner boundary; 149.756′ from skating line to skating line. For further details, see diagram. The reason for the use of two different radii in marking each curved end, resulting in lopsided curves, is that skaters skate close to inner boundary when starting on a curve and swing out away from inner boundary near midway point of curve (skating is always to the left around track).

Total Area Recommended for 14-lap Track. 100′ x 200′.

Surface. No official specifications. (Floor should be smooth and sprinkled with rosin or similar substance to provide traction.)

Individual Skating Lanes. No official specifications. (A skating lane 3½′ to 4′ wide should be allowed for each skater.)

Marking. Inner boundary of track must be clearly defined (generally flags set in wooden blocks, or tubs, are used). Each turn must be marked with two blocks with flags. Corners of blocks must be cut off or rounded. Starting and finish lines must be drawn across width of skating lane (generally in chalk), and blocks with flags must be placed at each end of lines, on inner and outer boundaries of skating lane.



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[*Note.* Addresses of publishers, distributors and organization headquarters will be supplied upon request.]

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